S. HRG. 98-692

# OREGON INLET, NORTH CAROLINA

## JOINT HEARING

BEFORE THE

SUBCOMMITTEES ON
ENVIRONMENTAL POLLUTION

AND

WATER RESOURCES

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

SECOND SESSION

ON

## S. 1471

A BILL TO AUTHORIZE THE USE OF CERTAIN LANDS IN CONNECTION WITH THE PROJECT AT MANTEO (SHALLOWBAG) BAY, NORTH CAROLINA

FEBRUARY 6, 1984

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# OREGON INLET, N.C.

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MONDAY, FEBRUARY 6, 1984

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEES ON ENVIRONMENTAL POLLUTION
AND WATER RESOURCES,
*Washington, D.C.*

The subcommittees met at 10:05 a.m., in room SD-406, Dirksen Senate Office Building, Hon. James Abdnor presiding.

Present: Senators Stafford, Chafee, and Abdnor.

Senator STAFFORD. The Committee on Environment and Public Works will please come to order.

Although Senator Abdnor and Senator Chafee are the joint presiding officers for this hearing, which is a meeting of two of our subcommittees, Water Resources and Environmental Pollution, I am going to, as chairman of the full committee, get the meeting started in the interest of time, both for our committee and for our very distinguished colleague, Senator Helms, who is here.

We are holding this hearing today on S. 1471 at the request of Senator Helms, along with Senator East and others, because of the intense interest in the proposed jetty project for Oregon Inlet in North Carolina.

Members of both subcommittees are well aware of the controversial nature of the proposed project, and we hope that this hearing will help us become better acquainted with the issues involved.

We have statements from Senators Mitchell and East which will be made part of the record at this point.

[The statements referred to follow:]

February 6, 1984
Statement
Senator George J. Mitchell
Hearing, S. 1471, Oregon Inlet Legislation

I want to welcome my colleagues, Senator Helms and Senator East, and the other witnesses to today's hearing. I look forward to your testimony.

The bill we are considering today, S. 1471, would authorize the Secretary of the Army, notwithstanding any other laws, to use lands within the Cape Hatteras National Seashore and Pea Island National Wildlife Refuge in carrying out construction of a Corps of Engineers project at Oregon Inlet in North Carolina. Proponents of the bill cite the need for reliable navigation through Oregon Inlet. This would enhance the area's commercial seafood industry while reducing loss of lives and property.

However, while there may be some public benefit from the project, I am concerned about the provisions of the legislation we are presently reviewing for several reasons. First, the bill would exempt the Oregon Inlet project from the provisions of the National Wildlife Refuge System Administration Act. As a member of the Subcommittee with jurisdiction over National Wildlife Refuges, I would have strong reservations over any bill which would exempt development projects from the primary law which protects refuges.

Second, the Oregon Inlet project could seriously damage the Pea Island Refuge. The refuge is a breeding and wintering area for migratory birds and other wildlife, including snow geese, peregrin falcons, Canada geese, and least terns. The project could accelerate beach erosion, resulting in deterioration or elimination of wildlife habitat.

Finally, the costs of the Oregon Inlet project have grown enormously, from $10 million in 1970 to over $100 million today. While the estimated life cost of the project is projected to be $600 million over fifty years, the benefits have become questionable and are being reassessed by the Corps. I am not certain the project remains realistic under current budget conditions.

Again, I want to welcome the witnesses to today's hearing. I hope that their testimony will further understanding of the many difficult issues raised by this bill.

# TESTIMONY
by Senator John P. East
before the
Joint Subcommittees on Environmental Pollution
and Water Resources
February 6, 1984

Mr. Chairman and Members of the Subcommittees:

Thank you Mr. Chairman, for scheduling this important hearing on S. 1471, the Oregon Inlet Lands Bill. I am pleased to have the opportunity this morning to testify in support of this bill, which would authorize the U.S. Army Corps of Engineers to use lands under the jurisdiction of the U.S. Department of Interior for the purpose of anchoring jetties at Oregon Inlet.

I applaud my distinguished friend from North Carolina, Senator Jesse Helms, for taking the initiative to see this measure through to this point of the legislative process. I am a cosponsor and endorse it wholeheartedly.

Mr. Chairman, Senator Helms and I have been working together with Congressman Walter Jones of the First Congressional District of North Carolina to resolve the land issue once and forever. S. 1471, affecting the Federal lands at Manteo Bay, North Carolina, has broad, bipartisan support throughout the state of North Carolina. It has my full support because it would allow for the completion of the Manteo (Shallowbag) Bay project, authorized under the River and Harbor Act of 1970 as a navigational project. That enabling legislation specifically identified the construction of jetties as the means by which the inlet would be stabilized. In keeping with the congressional mandate, the Congress has authorized, over a period of years, over $15 million for the construction of jetties. The project is of major importance to the economic advancement of northeastern North Carolina and to the lives and well-being of the fishing crews who work the stormy ocean nearby.

The Congressional Budget Office has prepared a cost estimate on this legislation. Their findings show that it will not impose significant additional costs on the federal government. It simply authorizes the Corps to use land for the stabilization project.

Mr. Chairman, the good people on the Outer Banks of North Carolina have too long endured delays in the completion of the Manteo (Shallowbag) Bay project. Fishermen often are forced to stay in port, and sport fishing has been seriously curtailed by lack of access to the ocean. A heritage and lifestyle known to this area is threatened with extinction.

The State of North Carolina and local interests in the Oregan Inlet vicinity wish to support and expand our domestic fishing industry. This legislation, by resolving the land issue, would permit the stabilization of Oregon Inlet and allow safe passage through the channel. The impact on our domestic fishing industry would be enormous.

If we are to continue to be responsive to the water resource needs of present and future generations, we ought to aim to improve navigational facilities to allow our fishing vessels safe passage. To this effort I commend this legislation and ask you to take action.

Mr. Chairman and Members of the Subcommittees, I urge you to support this legislation. It provides for the vital use of lands important to the development of a safe and stable navigation channel.

Again, thank you for this opportunity to testify on a matter affecting North Carolina.

Senator **Stafford**. We have a long list of witnesses today, but we are especially honored that our colleague, the Senior Senator from North Carolina, Senator Helms, is here to lead off. We understand that Senator East will be here, but that he will be somewhat delayed in appearing.

So, Senator Helms, we welcome you to the committee and will be more than happy to hear your statement.

## STATEMENT OF HON. JESSE HELMS, U.S. SENATOR FROM THE STATE OF NORTH CAROLINA

Senator **Helms**. Mr. Chairman, I thank you very much. Of course, I thank you as chairman of this committee for your accommodation in scheduling the hearing. I know you are busy. It means a great deal to me that you would do this.

I have, Mr. Chairman, examined the testimony taken during hearings held in the House of Representatives on the proposal advanced by the able North Carolina Congressman, Walter Jones. Congressman Jones' legislation, as you know, is essentially the same as S. 1471. I believe it is fair to say that much of the testimony during the House hearings wandered far afield from the precise and relevant issue before you, that being the removal of the purely legalistic technicality that appears to bar the Corps of Engineers from building the approved jetties. Mr. Chairman, the key word is "approved" because in 1970, nearly 14 years ago, Congress approved this project with the support and, I might add, the enthusiastic support of the State of North Carolina and all Federal agencies involved.

The time of the distinguished chairman is valuable, and I hope, Mr. Chairman, that we can focus on the precise issue at hand and not consume your time with a volatile reexamination of a question that was resolved nearly 14 years ago. It is really not fair to those who are now pleading with Congress to take some action that will permit them to continue to earn a living by providing seafood for the dinner tables of the American people.

I don't doubt anybody's sincerity, but I think it is important to bear in mind that S. 1471 addresses a serious problem in North Carolina, the very future of Oregon Inlet as a safe, navigable channel for commercial and recreational vessels and, most important of all, the future of many people who live in and around Dare County, N.C., and who depend on the local fishing industry for their livelihood. Many of them are here today.

Mr. Chairman, Oregon Inlet is located, as I mentioned, in Dare County along the Outer Banks, and those who haven't visited the Outer Banks have missed a great joy and, in the judgment of this Senator, it is one of the most beautiful areas of America and some of the best fishing to be found anywhere.

Oregon Inlet is the only inlet along the Outer Banks running from Norfolk, more than 90 miles to the north, to Hatteras, roughly 45 miles to the south. Oregon Inlet is, therefore, a potential haven for all kinds of oceangoing vessels in bad weather, and when the weather is bad along the Outer Banks, Mr. Chairman, the situation is treacherous.

You have to be hardy to live there year round, and you have to be particularly hardy and courageous to sail through Oregon Inlet every day in search of your livelihood.

Wanchese Harbor, which is on the back side of the Outer Banks, sheltered from the Atlantic Ocean, houses a commercial fishing fleet, and the only access to Wanchese Harbor is through Oregon Inlet.

The age-old problem there and the problem of this bill is serious shoaling in the inlet itself. There is often too little water in the channel for the fishing boats to pass safely and at such times, the captains must take their boats to other ports, which are many miles away, and this costs them dearly in time and money and sometimes makes their catch unprofitable.

Often the captains risk making it through the inlet; they risk their lives; sometimes they make it and sometimes they do not.

That is why I seek to emphasize, Mr. Chairman, that the question of the justification of the jetty was settled a long time ago, long before I came to the Senate. Only a legal technicality remains, and I would reiterate for the purpose of emphasis, that in 1970, nearly 14 years ago, Congress settled that question, the justification of the jetty, and it did so with the blessing of the State of North Carolina and all of the Federal agencies involved.

I guess the question is, Are we now going to reverse a commitment made to the people in 1970, a commitment made after a full and thorough consideration?

True enough, in the intervening years since 1970, officials at the Department of the Interior have expressed doubts about their authority to allow jetty construction on land adjacent to Oregon Inlet. These doubts are based on a legislative oversight at the time. Apparently, it did not occur to anybody in 1970 that this land had been previously set aside by Congress for the Cape Hatteras National Seashore and Pea Island Wildlife Refuge. So I would stress that the present dispute over this oversight really shows no concern for the larger and predominant issue, the lives being placed at risk, the jobs being destroyed, or the loss in terms of seafood delivered to the dinner tables of Americans. And to put it in perspective, the technical omission back in 1970 of legislative authority to allow construction on this land adjacent to Oregon Inlet, this technicality has resulted already in a time-consuming, costly, and highly damaging delay in fulfilling a commitment made by this Government in the year 1970.

I would, again, emphasize that the commitment in 1970 was shared by all of the agencies involved in support of the jetty project.

Mr. Chairman, repeated attempts to persuade officials at the Department of the Interior to issue permits for jetty construction have proven unsuccessful. Former Secretary Watt told me at the time he was Secretary, that his lawyers advised him that he had no authority to issue the necessary permits, and while I do not agree with the lawyers at the Interior Department, I have, of course, accepted the reality of their interpretation. That is why this bill, S. 1471, is necessary. It would simply authorize the Corps of Engineers to use land within the boundaries of the Cape Hatteras National Seashore and land within the boundaries of Pea Island

Wildlife Refuge, to carry out the project at Manteo, Shallowbag Bay area in North Carolina.

Mr. Chairman, Congressman Jones, Senator East and I have been working together, and we have solicited and received the support of the Governor of our State and other interested parties to see this project through.

So in summary, and I do this in conclusion, we are asking only that you clarify the intent of Congress with respect to the use of land necessary to build the jetties which were approved in 1970. This legislation does not request an appropriation. It would simply settle the question of land use for jetty construction in fulfillment of a commitment made in 1970 with a full understanding and agreement of everyone involved.

I thank you, Mr. Chairman.

Senator ABDNOR [presiding]. Good morning, Senator Helms. I am sorry I am late.

Senator HELMS. You were not late; we were early.

Senator ABDNOR. I had to address a group this morning. I talked too long, I guess. I didn't get out in time.

We do welcome you here. I am looking forward to this hearing. I know of your great interest in this issue. Senator Stafford.

Senator STAFFORD. Mr. Chairman, let me say that I have never run Oregon Inlet, but thanks to the U.S. Navy, I have experienced all the trials and tribulations of being fairly close offshore. I had several occasions back in World War II.

Senator ABDNOR. This is on Cape Hatteras?

Senator HELMS. Yes.

Senator ABDNOR. That is where the lighthouse is, on the Cape, isn't that right?

Senator HELMS. I am sorry I don't have on my lighthouse tie this morning. Yes, it is in the area. I am going to have to take Senator Abdnor and Senator Stafford down to see this area.

Senator ABDNOR. I saw the lighthouse when I was down there over Easter recess.

Senator HELMS. Mr. Chairman, we are trying to save the lighthouse, and we are moving along pretty well. We are doing it with private funds. It is going to be hard for some in this city to believe. The Governor of North Carolina, who I understand by rumor or otherwise may be interested in serving in the Senate, the Governor and I worked together raising private money to preserve the lighthouse. I am quite sincere, I want to take you and the other Senators down there at the first opportunity.

Senator ABDNOR. I certainly know you are sincere because we talked about this many times, and I know all the time and effort you have been putting in on it. It is a very important item in part of your life, I know.

Senator HELMS. I thank the chairman.

Senator ABDNOR. Thank you for being here today.

Senator HELMS. Mr. Chairman, may I presume on the chair?

Senator ABDNOR. Sure.

Senator HELMS. I would like my friends from North Carolina, the people who make their living and live in this area to stand up so you can see who they are. If they had the money to come to Washington, D.C., the others would be here, too.

Senator ABDNOR. We certainly welcome all of you people, and I know of your great interest. Your Senator has told me, on numerous occasions, about the importance of this and what it means to you people down there. He hasn't let us forget it. We welcome you to the meeting today.

Senator East isn't here at this time, and I understand Mr. Summers is snowed in—I didn't think they ever had snow down there. Is Mr. Vallianos here at this time, and Mr. Arnett? Would you gentlemen both come up at the same time, if you don't mind.

Mr. Vallianos, I will call on you first. Then we will hear from Mr. Arnett. Without any delays, we will let you go right ahead.

## STATEMENT OF LIMBERIOS VALLIANOS, CHIEF, COASTAL ENGINEERING BRANCH, WILMINGTON DISTRICT, CORPS OF ENGINEERS

Mr. VALLIANOS. Thank you, sir. Mr. Chairman, members of the subcommittee, I am Limberios Vallianos, Chief of the Coastal Engineering Branch of the Wilmington District, Corps of Engineers. I am pleased to appear today to discuss Senate bill 1471.

S. 1471 would authorize the Secretary of the Army, acting through the Chief of Engineers, to use lands within the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge that are necessary for implementation of the project at Manteo [Shallowbag] Bay, N.C., often referred to as the Oregon Inlet project. This project was authorized by section 101 of the Rivers and Harbors Act of 1970, but the Department of the Interior cannot issue a permit for use of certain lands on the refuge because it has determined that jetties would be incompatible with the purposes for which the refuge was established.

Also, the Department of the Interior has determined that it has no authority to issue such a permit for the national seashore. S. 1471 would provide authorization for use of these lands and would obviate the need for any permits from that Department.

Oregon Inlet is the northernmost entrance through the barrier islands which parallel much of the North Carolina coast. The barrier islands protect the coast and provide protected lagoons between them and the mainland shore. Communities and fishing industries, such as the one based in the village of Wanchese, were established early along these lagoons to take advantage of the protection. Since construction of a Federal project at Oregon Inlet with connecting channels through Pamlico Sound, as authorized in 1950, use of the channel for offshore fishery has expanded considerably.

In 1950, Congress authorized a channel through Oregon Inlet at a depth of 14 feet and width of 400 feet, as well as associated navigation channels in Pamlico Sound to the villages of Wanchese and Manteo. That work was completed in 1961. However, due to the rough water conditions and the constant sand movement along the shore, it has been very difficult to maintain the authorized channel depth and width over the ocean bar at the inlet on a year-round basis. Dredging in an attempt to maintain the 14-foot channel over the past 22 years has averaged about 327,000 cubic yards a year but, in the past 3 years, in an effort to provide a more dependable channel and one nearer to full project dimensions, the annual average has increased to 903,000 cubic yards. The problem of shoaling at the inlet is made worse by the fact that the position of the channel shifts rapidly, particularly during storms. The hazardous condition at the inlet and the dangerous weather conditions so often occurring in the area have led to many groundings in recent years, with loss of several boats, injuries to crews, and the loss of eight lives since 1969.

In 1970, Congress authorized project modifications consisting of: One, stabilization of Oregon Inlet with two jetties; two, a system to transfer sand from one side of the inlet to the other; three, pier protection for the bridge over the inlet; four, deepening the inlet channel to 20 feet; five, a channel 14 feet to Wanchese; six, a 15-acre basin at Wanchese; and lastly, a 10-foot channel from Manteo Bay to Croatan Sound. The sand bypass system, including the floating barrier breakwater component, has been designed as a necessary element of the jetty project in order to minimize erosion. Our studies indicate that this system will prevent the erosion which would otherwise be caused by the jetties.

The jetty structures would require anchoring on and use of lands within the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge. In total, 90 acres of land would be required on a permanent basis to construct, operate, and maintain the jetty structures. Additionally, permanent easements involving 50 acres of land would be needed for periodic use in providing beach corridors for sand bypassing. As mentioned previously, the Department of the Interior has indicated that it is unable to issue permits to allow the use of park service or wildlife refuge lands for this project because that Department has determined that the project would be incompatible with the purposes of the refuge and because it does not have the authority to allow such use of the National Seashore.

In order to maintain Oregon Inlet in as safe condition as possible, the Corps of Engineers has been performing intensive maintenance dredging with both corps and contract dredges. Through this effort, and because of the good weather conditions this past fall, and early winter, the channel was at about the dimensions authorized in 1950, when dredging was stopped for the season at the end of December 1983.

Because of questions on the project's economic benefits, based on projected fishery resources available for harvest through use of Oregon Inlet, we are reviewing the project's economics. This reanalysis will determine whether there is current economic justification for this project to move forward. The report, Mr. Chairman, is scheduled for release by the Secretary of the Army June 30 of this year.

Accordingly, while legislation, similar to S. 1471, would be needed for construction of the authorized project to proceed, the administration does not now have a position on the merit of the project or on those provisions of S. 1471.

Sir, this concludes my statement. I will be glad to respond to any questions you may have.

Senator ABDNOR. I think we will go ahead with Mr. Arnett next.

## STATEMENT OF G. RAY ARNETT, ASSISTANT SECRETARY, FISH AND WILDLIFE AND PARKS, DEPARTMENT OF THE INTERIOR

Mr. ARNETT. Thank you, Mr. Chairman. Before I start out, I was in Bismarck, N. Dak., the other day. A lot of your constituents were up from South Dakota. They knew I was going to testify here and wanted me to pass along their best wishes. They haven't forgotten you in the snow. They want you to know they think you are a straight arrow. I was at the National Sunflower Seed Association, which is very big with your people. They wanted to be sure I welcomed you and let you know they think highly of you.

Senator ABDNOR. Thank you. I appreciate that, and I bet you softened them up a little. But I like what you said.

Mr. ARNETT. We do have a little sketch here. Maybe the Senator would like to have that so he knows where the lighthouse is.

Senator ABDNOR. At least I saw the lighthouse.

Mr. ARNETT. Mr. Chairman, I have at the table with me, in case there are some technical questions you would like answered, Dr. Jay Gogue from Atlanta. He is the National Park Service's regional chief scientist. To my immediate right is Harold O'Connor of the Fish and Wildlife Service, who is Associate Director of Habitat Resources.

I appreciate this opportunity to testify, Mr. Chairman, concerning the Department's views on S. 1471. This legislation, as has been reported by the previous speakers, would authorize the Secretary of the Army to use the Department of the Interior lands located within Cape Hatteras National Seashore and Pea Island National Wildlife Refuge to build the Manteo, or Shallowbag, Bay jetties at Oregon Inlet in North Carolina. The project proposed by the Corps of Engineers would require construction of the jetties on national seashore and national wildlife refuge lands with routine placements of dredge material on the refuge and periodic placements on the seashore. The National Wildlife Refuge System Administration Act permits this type of activity on a refuge if it is found to be compatible with the purposes for which the unit was established.

Pea Island National Wildlife Refuge was established in 1937 for the purpose of providing a refuge and breeding ground for migratory birds and other wildlife.

In a compatibility statement issued May 28, 1982, regarding the issuance of the Department of the Interior permit for jetty construction and dredge material placements on the refuge, the Fish and Wildlife Service concluded that the project, as currently proposed, is not compatible with the purposes for which the refuge was established.

We concluded at that time that the proposed project would create conditions, including accelerated erosion, that would significantly alter the refuge environment resulting in the deterioration or the elimination of wildlife habitat and certain wildlife-related public uses. Canada geese, snow geese, black duck, gadwall, whistling swans, many types of shore birds, and the loggerhead turtle would be affected by construction. Sea trout, summer flounder, and blue crab would also be affected. So consequently, no right-of-way permit can be issued under existing authority to the corps.

In addition, under existing law, the National Park Service does not have the authority to allow jetty construction on the national seashore which, I believe, was established in 1937.

S. 1471 would authorize the Army Corps of Engineers to use this land to carry out the project of Manteo Bay.

Mr. Chairman, we fully recognize this interest in the safe navigable channel at Oregon Inlet, and we certainly support the goal of keeping the inlet open. However, we are still searching for ways to keep the channel open without adverse impact on the refuge and the seashore. So until all the information on the project is in and evaluated, including the corps' economic feasibility study just referred to, we take no position on S. 1471 or other legislation that would authorize a transfer or use of the refuge or the seashore.

We dislike a no position, but we are in a quandary as to what the Department of the Interior can do. The Congress told us at one time in 1937 what we could do with the seashore. They also told us in 1937 what we could or couldn't do with the refuge and then in 1970, 14 years ago, Congress authorized this project. There are conflicts that we can't resolve and it seems that a resolution can only come from Congress.

Thank you, Mr. Chairman. I will be happy to answer any questions.

Senator ABDNOR. Thank you. Senator Chafee, we welcome you to the committee. Do you care to ask any questions?

Senator CHAFEE. I have no opening statement, but I do have a couple of questions of these witnesses, but I don't want to be first.

Senator ABDNOR. Go right ahead.

Senator CHAFEE. Do I understand correctly, Mr. Arnett, that the Fish and Wildlife Service does not have the legal authority to issue the corps a permit to construct these jetties?

Mr. ARNETT. They do have these authorities, Senator, if it is shown to be compatible with the purposes of the refuge. However, as I pointed out, in 1982, after a very thorough analysis, it was not possible for the Fish and Wildlife Service to say that the jetties would be compatible with the purposes of the refuge, therefore, we cannot issue the permit.

Senator CHAFEE. I wonder if you could supply a copy of Interior's compatibility statement for the record.

Mr. ARNETT. Yes, sir, I believe one has been submitted (see p. 95), but I will be happy to submit one for this record.

Senator CHAFEE. I will have some other questions that I will just ask for the record, if I may. I have some questions of Mr. Vallianos.

Senator ABDNOR. All right.

Senator CHAFEE. Mr. Vallianos, I am not clear on the cost of this project, as you estimate it. What would it be? You had a cost in 1970, did you, and now you have a cost now?

Mr. VALLIANOS. Yes, sir. The latest approved cost estimate, based on October 1983 price levels, amounts to a construction cost, that is for the total project—jetties, entrance channel, interior channels, harbor basins, et cetera—a total cost of $99,086,000. The annual operations and maintenance cost amounts to $4,212,000.

Senator CHAFEE. I am not familiar with all the details of this. Does this project depend on what they call a sand bypassing system?

Mr. **Vallianos**. Yes, sir. That, I think, would generally be the case of any jetties constructed in the United States today, and probably in most parts of Western Europe.

Senator **Chafee**. Has this been used in the United States?

Mr. **Vallianos**. Yes, sir, sand bypassing has been used. There is a new feature in this particular project associated with the system that involves transportable breakwaters to increase the dredge production rate by sheltering the dredge so it can operate for longer periods of time and higher productivity during the time which it is bypassing sand.

Senator **Chafee**. Is this a proven technology? Have you done this so-called floating breakwater?

Mr. **Vallianos**. The floating breakwater is a new development, Senator Chafee, for the ocean environment.

Senator **Chafee**. I might have some questions for the record. Thank you.

Senator **Abdnor**. You were talking about costs, but what is the present cost of maintenance?

Mr. **Vallianos**. Senator, the expenses of maintenance through fiscal year 1983, the overall spent over a 21-year period, has amounted in total up through fiscal year 1983 to $20,500,000.

Last fiscal year in 1983, the amounts expended amounted to $2,927,000, roughly $3 million. This did not accomplish in fiscal year 1983 the dredging of a channel that was serviceable. This began to be developed in the latter months of fiscal year 1983 and through the first quarter of fiscal year 1984. Through the first quarter of fiscal year 1984, we expended about $2 million and estimate for the remaining three quarters of this fiscal year that we will expend another $2.5 million so that the total projected fiscal year 1984 expenditure is something like $4.5 million.

Senator **Abdnor**. What does that do for you? Is that a more sophisticated machine? A new dredge?

Mr. **Vallianos**. It would do for us, hopefully, a better job of maintaining the channel of some serviceability, some value to the commercial fishery industry through this winter season.

We have no way to predict what will happen to the channel through the remaining winter months of this year. We do know that we have had, at least in the early winter months and through to this day, extraordinarily calm conditions. The past 22 years of record in our attempts to maintain nominal channel dimensions through Oregon Inlet have been extremely difficult. We have only maintained channel dimensions with hopper dredge equipment used in the early 1960's and 1970's period and in this last dredging in fiscal year 1983. Our record shows we only had the nominal project dimensions 28 percent of the time that such equipment was ever used.

Additionally, with our sidecaster, which had to be used many times because deeper draft hopper dredges simply could not operate through the inlet, there our record is even less impressive; that is, we only maintained nominal project dimensions 16 percent of the time. So what happens in this highly variable system through this remaining part of this winter is unpredictable at this time.

What we do say in terms of expectations is that our past history demonstrates that we could lose those channel dimensions very quickly in a matter of a day or several days with one single winter storm.

Senator ABDNOR. As I understand the corps project, its success depends upon dredging and the bypassing of those sandy areas where erosion has occurred.

Mr. VALLIANOS. That is right.

Senator ABDNOR. At what sea height can this bypass dredge operate safely.

Mr. VALLIANOS. Our operating range for the dredge, with the breakwaters, will be in waves having heights as much as 7 feet which, Senator Abdnor, are quite large waves. The average wave heights are 3 to 4 feet. We will also perform this operation at least once a year and during those periods of year in which the wave climate of that particular region is at its lowest general level. The breakwaters, however, are being designed with survivability in the environment to waves as high as 16 feet or so, which are extremely high and have only been recorded at one time in that vicinity.

Senator ABDNOR. You haven't designed the breakwater yet?

Mr. VALLIANOS. Yes, sir, the basic breakwater unit, and may I add here, Senator, this is a very extensive effort by the Federal Government. It does not only involve the Corps of Engineers establishment, its laboratories, but also the U.S. Navy Civil Engineer Laboratory and also private architect engineer firms specializing in ocean structures for the oil industry.

At this point, the documentation involves a body of data of experimentation and design constituting some 30 reports. The basic structure has now been designed. We are looking at operational issues now, whether we should connect two of these units together or moor the units separately. Our investigation is into purely a question of how we ought to most economically operate the system in the environment.

Senator STAFFORD. Will the chairman yield?

Senator ABDNOR. Yes.

Senator STAFFORD. Mr. Vallianos, assuming the jetties might be built, how successful do you project they will be in keeping a channel open and, notwithstanding winter storms, and so on, on through Roanoke Sound?

Mr. VALLIANOS. Senator Stafford, with the design effort that has been expended on this, we are very confident of full success of this project, and may I add in connection with the sand bypassing system that, in fact, we have an auxiliary system. At times that we may wish, for example, to pass small quantities of material rather than large quantities, we have a system that can be placed on those portions of the accumulated sediments above water level and bypass those to one side or the other of the inlet. We have used such a system and, as a matter of fact, on the National Park Service property of Cape Hatteras.

As long as sand bypassing is a dedicated and resolute feature and the agency responsible for that carries it out in such a manner, there is no reason whatever that it should not work. As a matter of fact, where such dedication exists in sand bypassing, it works very well. Where we find problems associated with jetties, they are either at sites in which sand bypassing is not a feature or in which the responsible agency does not take it as a dedicated feature of the project.

This, I have said before, and will close and say, the question of beaches adjacent to these jetties and their maintenance are of equal interest to us as an agency as with the matter of improved navigation.

Senator STAFFORD. Let me ask you one more question. That is, how high a sea state are these jetties being built for, and I guess in addition to that, how high a sea state would a fishing vessel be able to use them during the winter period?

Mr. VALLIANOS. The jetties themselves were designed by an extensive 2-year program to develop a minimum cost design in which the annualized capital costs of project construction—that is to build the jetties at a cost of about $80 million—and the summation of that with the cost of actual maintenance is at a minimum. It is the same procedure used, for example, to design drilling platforms in the North Sea, or in the Gulf of Mexico or along the Pacific coast. As I stated, there was a 2-year program to insure that not only would the structure stand up, but that it would not be over designed. The transportable breakwaters are being designed to sustain the highest waves that we can generally conceive there with extra tropical depressions. If a hurricane is coming up the coast, the breakwaters would be disengaged and moved to a safe harbor until the passage of that storm.

Senator STAFFORD. Will it be unlikely that a fishing dragger would attempt to go the inlet anyway in very high sea states?

Mr. VALLIANOS. Yes, sir. However, the basic intent of the jetties, from a navigational point of view, is to prevent the sediment influx into the navigation channel which can occur, even with a dredging program. Hence, as the vessels seek refuge running before a storm or in normal storm conditions which frequent that coast annually, the vessel pilots can be assured that beneath that vessel lies sufficient depth to prevent grounding.

Senator STAFFORD. Thank you.

Mr. VALLIANOS. Yes, sir.

Senator CHAFEE. I have a couple more questions for Mr. Arnett. It is my understanding that Interior has an alternative to building the jetties, Mr. Arnett.

Mr. ARNETT. Mr. Chafee, we have a suggestion that the corps has examined in some detail. The alternative is dredging, and there is an argument of whether, as Mr. Vallianos pointed out to you, dredging is too costly and whether it is effective or not. We prefer the dredging proposal to the jetty proposal, if dredging could be done to the degree that it would keep the inlet open and in a safe condition.

The Fish and Wildlife Service's alternative would be the dredging if it were compatible and suitable.

Senator CHAFEE. Didn't the corps find that just a year ago that dredging was infeasible?

Mr. ARNETT. I am not going to speak for the corps, but what I understand is that dredging with sidecasters, I think everybody agrees, has not, over the years, been feasible. The use of the split-hulled hopper dredge was tried this year for the first time for a period of several months. I think it was in from September to December. I went to Oregon Inlet and observed that operation in late November. The results we were seeing then, and as it has been pointed out this was only a one-shot deal and it was during a relatively mild winter, it appeared to me to be operating well. However, I certainly am not going to try to second guess the Corps of Engineers, whose responsibility it is to give us that information of whether dredging is suitable or not.

Senator CHAFEE. Didn't the Secretary of your Department, in June indicate in a letter to Senator Helms that the Department could not support this legislation in light of the determination that the jetty proposal would negatively affect the seashore and the refuge?

Mr. ARNETT. Without reference to the letter, Senator, I think he said that according to our solicitor we could not issue the permits that were required for the jetty construction, not that he was opposed or in favor.

If the Congress sees that they want to live with their 1970 decision to authorize this construction, then the Congress is going to have to give the Department of the Interior some way in which we can make those lands on the refuge and seashore available. Perhaps this is the legislation that would allow that to happen.

Senator CHAFEE. I think, Mr. Chairman, we have a copy of that letter. Why don't we put that in the record.

Senator ABDNOR. Fine. Without objection, it will be made a part of the record.

[The letter referred to follows:]

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

JUN 22 1983

Honorable Jesse Helms
United States Senate
Washington, D.C. 20510

Dear Jesse:

This letter is in response to your request for comments on the draft bill to authorize the Corps of Engineers to use lands located within Cape Hatteras National Seashore and Pea Island National Wildlife Refuge to build jetties at Oregon Inlet.

As you will recall, I indicated at the April 21 meeting that I could not offer support for such legislation in light of the Department's determination that the jetty proposal would negatively impact the Seashore and the Refuge.

Also, it is the normal procedure of the Department not to offer official comment on legislation until we are requested to do so by the appropriate committee of jurisdiction. At that time, the standard input from the affected agencies can be coordinated and a formal position taken after completing the established clearance process.

Your statement placed in the Congressional Record upon introduction of the legislation has been reviewed. Please know that we appreciate your mention of the lack of our legal authority to issue the permits.

With best wishes, I am

Sincerely,

SECRETARY

Senator CHAFEE. I will have some questions, as I indicated. I would appreciate it if you and Mr. Vallianos could answer those for the record. Thank you.

Senator ABDNOR. Fine. Mr. Vallianos, when will this dredging be going on, in the summer or the winter?

Mr. VALLIANOS. Senator Abdnor, are you referring to the sand bypassing or the normal dredging?

Senator ABDNOR. Bypassing.

Mr. VALLIANOS. We would schedule that bypassing in late spring and summer period. It will take, depending on the accumulations which will vary highly in that area, from 1 to 2 months per year at a minimum.

Senator ABDNOR. You can't do any dredging in the winter; right?

Mr. VALLIANOS. Yes, sir, we could do dredging in the winter. In doing that, because of the rougher weather and the more frequent storms, it is somewhat more costly, but more importantly, or just as importantly, it is necessary to bypass in the calmer periods because the shorelines adjacent to Oregon Inlet experience quite high erosion through normal processes, thus we need to build up a protective buffer during the calmer periods, a flat beach area, which can best be attained during the calmer periods of time.

That buffer has two functions. One is to provide sand to adjacent shore areas, being transported there by the wave-generated currents, and the other is to provide sufficient width of beach to prevent the erosive processes from intruding on the existing natural beach area.

So there is every reason to bypass in the calmer period, both from a cost point of view, because of higher dredge production rates and it is a time we can build up the beach buffer zone to protect those existing beaches. It is not possible to do that during storm conditions in the wintertime. The sand is taken away faster, in fact, than any dredge could pump it on there. So, in effect, the planned sand bypassing is a preventative medicine approach to the problem of the adjacent beaches.

Senator ABDNOR. Can you forecast in advance in the summer where the location of a winter storm erosion will be taking place?

Mr. VALLIANOS. Yes, sir. We have studies in connection with the overall planning of this project which involve some 18 miles of that coastline, 9 miles north and 9 miles south of Oregon Inlet. To effect a workable bypassing plan, we must control about 3 to 5 miles immediately adjacent to that inlet, and, in providing a sand buffer and a sand supply within that zone, it will protect those adjacent beach areas. We have evaluated both the overall zone possibly influenced by these jetties, and that zone where we must provide the sand in the sand bypassing system.

Senator ABDNOR. Thank you. I think that concludes the questions. We probably will have some others and will submit them to you in writing, if we do. We thank you for appearing today.

We have a large list of people yet to hear from; individuals who have come all the way from North Carolina and who feel strongly about this. We certainly want to hear from you people.

I understand Senator Melvin Daniels will be replacing Mr. Langfelder. Panel 1 will consist of Dr. De Santo, Mr. Etheridge, Mr. Williams, Mr. Shiffman, Mr. Midgett, Mr. Daniels, and Mr. McDonald.

Will those gentlemen please come forward to the table? If there is a change, fine, you can tell me for the record. As I understand, these are the proponents of the project, is that a safe assumption?

Senator Daniels, are you heading this up? If there has been a change in the names, you can give them to us, otherwise, you go right ahead and conduct this in any order you want to.

## STATEMENTS OF MELVIN R. DANIELS, NORTH CAROLINA STATE SENATOR; DR. ROBERT S. DE SANTO, CONSULTANT, RALEIGH, N.C.; WILLIE ETHERIDGE, JR., COMMERCIAL FISHERMAN, WANCHESE, N.C.; ROBERT G. WILLIAMS, CITIZEN, FORMER DIRECTOR OF INDUSTRIAL SEAFOOD PARK, WANCHESE, N.C.; HARRY SHIFFMAN, MEMBER, OREGON INLET COMMISSION, MEMBER, MANTEO TOWN COUNCIL; ORVIN MIDGETT, PAST PRESIDENT, OREGON INLET GUIDE ASSOCIATION, OWNER AND CAPTAIN, CHARTER BOAT, WANCHESE, N.C.; MICKEY DANIELS, OWNER, COMMERCIAL FISHING TRAWLER FLEET, WANCHESE, N.C.; DANIEL E. McDONALD, ON BEHALF OF THE OREGON INLET USERS ASSOCIATION

Mr. MELVIN DANIELS. Thank you, Mr. Chairman. We, too, are most grateful for your time and allowing us to appear before you. Senator Helms expressed our concern so well, and we certainly echo everything he said.

Senator ABDNOR. He did a very fine job.

Mr. MELVIN DANIELS. He did. First, let me tell you that bad weather is coming. We came up last night, and we were notified that part of our delegation are snowbound in Raleigh right now with 3 inches of snow. So we think it is heading this way.

My name is Melvin Daniels. I am a native of the village of Wanchese just outside of Oregon Inlet. My father and all recorded grandfathers were commercial fishermen. I became involved in government and never went back to the sea.

I share two hats this morning. One as a Senator for more than a decade from the Oregon Inlet area and, second, as the chairman of the South Atlantic Fishing Management Council which the Congress, in its wisdom, created in 1976.

In 1976, you passed Public Law 94-265, the Fishery Conservation and Management Act, which extended jurisdiction out to sea to 200 miles. In doing so, you formed very wisely the eight regional Fishery Management Councils to give first right to fishermen within the limits of the United States. This we congratulate you for. The Fish and Management Councils are working, and we are deeply interested in the future.

I will call to the committee's attention that in the Magnuson Act of 1976, there were seven national standards outlined that fishery management and fishery conservation should be interested in, seven national standards, and the four standards I will speak of says conservational management measures shall not discriminate between residents of different States. If it becomes necessary to allocate fishing privileges among various U.S. fishermen, such allocations should be fair and equitable to all fishermen. I think we are seeing a transition today among the fishermen of the Nation prior to 1976 and the Magnuson Act. The fishermen of our region for many decades were river and sound fishermen who ventured out in small vessels. You and the Congress were aware perhaps more than our fishermen, that the competition to the U.S. fishermen was growing from other nations. As we look back, we saw what was happening. The large nations, particularly those of the Iron Curtain bloc and the Japanese fishermen, were using large vessels, deepwater vessels, vessels that could venture far and stay a long while. We could not do this with our shallow vessels. We could not stay at sea very long.

Just the last few days I have gotten data from several economists who have told me that indications now from the University of Miami and the University of Rhode Island are suggesting that from an economic standpoint, the vessels 100 feet and up are in a more positive position to compete with foreign nations. These vessels are recording water depths of 10 to 14 feet under normal conditions.

At times, we don't have that in Oregon Inlet. Our fishermen have made the transition to the sea over the last two decades by moving their vessels up to 80, 90, 100, 110, and 120 feet in length. Right now, many of the vessels are based, due to no fault of their own, to ports to the north and the south. At times, they cannot get in the inlet.

Economic data would suggest that in good years, we can have the advantage to our fishermen of 16 to 20 percent of the total North Carolina catch through Oregon Inlet. In bad years, when the inlet is closed. it dropped to 10 percent. So we have economic justification that the larger vessels are what the Nation needs to compete. We find there is growing interest in the Nation in the squid fishery, which is now being dominated by Spain and Portugal. Our large vessels can stay at sea and compete. Our smaller vessels cannot. There is the possibility of the swordfish industry will be severely restricted as we see studies now pointing. These fishermen will want to go into tuna, which requires longer vessels and more duration at sea.

I think my point there, Mr. Chairman, and members of the committee, is Oregon Inlet, in order for the Nation's fishermen to have just competition, requires deeper and longer vessels for longer duration at sea. The small vessels cannot do that.

Senator **Abdnor**. Senator, you are making a valid and fine point. Are all you gentlemen testifying going to make statements? The reason I ask is that we still have another panel to hear, and we do have a deadline. I may have to ask you to summarize your statements because time is running out.

Senator **Stafford**. Mr. Chairman, before he summarizes, might I ask the Senator, what are the size of the vessels generally that are being utilized in the Oregon Inlet area right now?

Mr. **Melvin Daniels**. I am going to yield to my fishermen on each side. Generally they range right now from 70 feet to 112 or 118 feet.

Senator **Stafford**. I gather they operate in 9 to 12 feet of water.

Mr. **Melvin Daniels**. Yes; depending on the catch, when they are loaded that is when they have trouble finding the bar. They need to stay at sea. If I may summarize?

Senator **Abdnor**. Yes.

Mr. **Melvin Daniels**. We are bullish on the Corps of Engineers. The Corps of Engineers have proven time after time to North Carolina and the Nation they are the experts in the field. They do not go on academic theory as the opponents are attempting to do. They have models, they have research stations. We have seen them at work. We recognize the validity of their testimony, and we believe in the Corps of Engineers.

The construction of jetties in Oregon Inlet will do something I can't say often enough. It will stop the erosion of the Pea Island Refuge to the south. I believe this is important to you gentlemen as it is to us in North Carolina. The erosion rate south of the inlet on our great national refuge has been running 4 to 40 acres per year, I am told. Oregon Inlet from erosion is now approximately one-quarter to one-half mile south of what it was in 1946.

The jetties will do two things: provide safe entrance to our fishermen and stop the erosion of our wildlife refuge. I am pleased for the time, and I could go on and on because I believe in Oregon Inlet, but I recognize your time restraints.

Senator **Abdnor**. Thank you, Senator. I know you believe strongly in the project. Against all that, we have a clock that we are up against. You go right ahead and introduce the other panel members.

Mr. **Melvin Daniels**. I am not sure which order you want to go. Dr. De Santo

## STATEMENT OF DR. ROBERT S. De SANTO

Dr. **De Santo**. Mr. Chairman, gentlemen, I am Robert S. De Santo, chief scientist for DeLeuw, Cather Co., a Washington, D.C., based consulting firm where I am responsible for all environmental analysis, guidance, and mediation which may arise separately from or within various of our engineering projects.

I have been practicing as a full-time professional applied ecologist in industry since 1972 before which I taught as a college professor. I have been involved in many aspects of environmental management, particularly with respect to problems associated with proposed development in the coastal zone.

In addition to my responsibilities, I am founding editor in chief of the international journal of "Environmental Management," and a technical book series on environmental management, which are both published by Springer-Verlag of New York, Heidelberg, and Berlin.

I am also chairman of the National Academy of Sciences, Transportation Research Board's Subcommittee on Environmental Mediation. In all these respects, I have tried to devote my career to fostering prudent environmental stewardship.

The congressional record which is being developed on the proposed Oregon Inlet project is not only complex but also highly emotional, and that emotion, although perhaps understandable, makes rational evaluation of this proposal more difficult than would otherwise be the case. Such a charged atmosphere, especially relative to the claims by some of dire environmental consequences, is likely to create a misleading base from which you must seek to make a judgment on the real merits of the proposed project. Therefore, I was very recently asked by the Oregon Inlet Commission to help by reviewing this record and by preparing written testimony which would offer my perspective of the facts and the fancies of that record without the confusion of mixing emotion with judgment.

I am familiar with the environmental aspects of the proposed Oregon Inlet project and with its implications. I believe that it can be a prudent and environmentally safe project, notwithstanding that it is large and it is complex. Therefore, my intention is to devote the next several days preparing written testimony in support of this belief which I would submit to you within the next 10 days.

My purpose today is to introduce myself as I have done and to outline the basis of the problems and its solution from my perspective as a scientist and environmental manager.

With that in mind, I believe the following: First of all, the dynamics of coastal erosion at Oregon Inlet is great and any manmade system used to modify that process must be so carefully designed and carried out that there is no possibility for a significant oversight. There is, therefore, in this project, virtually no margin for serious error.

Second, the funds of scientific understanding and related practical experience available to undertake the proposed Oregon Inlet project is great and necessary technology does indeed exist, or can be developed, to create, implement and maintain the proposed project. No organization or individual has more site-specific information or experience than does the Corps of Engineers in the matter.

Furthermore, sand bypassing can work and does elsewhere.

Third, the cautions which I have read and heard against this project expressed by many in the scientific community seem often so emotional and subjective as to make it impossible to separate probable fact from a philosophy or viewpoint that simply cannot accept environmental management as a safe means of solving large or dynamic problems, such as we face in Oregon Inlet. I disagree with that point of view.

I believe environmental management can, indeed, be properly applied to this case, and many others, and succeed.

I believe that those of my colleagues opposed to this project should, indeed, require answers to all the serious concerns they have and that perhaps through formal environmental mediation all parties can arrive at a point of mutual respect and support. I certainly hope so. But whatever the outcome of these hearings, I believe quite firmly that this project is scientifically and engineeringly feasible, and I look forward to providing the subcommittee with my written testimony.

That concludes my statement, Mr. Chairman.

Senator **Abdnor**. Thank you, Dr. De Santo. We will be anxious to have your report when you are finished.

Mr. **Melvin Daniels**. Our next speaker is a long-time, lifetime commercial fisherman, Capt. Willie Etheridge.

Senator **Abdnor**. Let me say one thing to each of you people, your written statements will all be made a part of the record in its entirety. That is why we ask for the summary. Again, as we get into this situation quite often where we have so many witnesses and such a short time, so I have to keep reminding you.

Mr. **Melvin Daniels.** You are very gracious.

## STATEMENT OF WILLIE ETHERIDGE, JR.

Mr. **Etheridge.** I am Willie Etheridge, Jr., and I am a commercial fisherman from Wanchese. I started as a lad in 1931, following in my father's footsteps, just as he followed in his father's. In that time, I have passed in and out of Oregon Inlet more than 4,200 times. I am a pretty good fisherman. I know where the fish are. I have studied their life cycles and feeding habits under the best teacher there is—necessity.

My heart is with the sea, only nowadays, it goes out there with my children and grandchildren as well. That is one of the things that scares me. The other I will talk about in a few minutes.

For the Etheridges of Wanchese, to be a fisherman is the logical calling. But our heritage is threatened by a new uncertainty. One of the world's most plentiful fishing grounds is not two dozen miles from our dockside, yet every time we leave to get to it, or coming home, we risk our life and our life's savings. Tragedy is as timeless as men going to sea to fish. But it is no less agonizing for its antiquity, especially when it could have been prevented.

One night in 1971, we followed a trawler to the Oregon Inlet bar where she broke up right in front of us before we could get to her. Two bodies were found, but the captain's never was. A year later, so his family could collect his benefits, the social security asked me to sign an affadavit to say that there was no way he could have survived.

On Easter Eve, 1979, we were waiting outside the ocean bar for a fog to lift. When it did, the first trawler through Oregon Inlet reported a boat broken up on the bar and we went to look for survivors. I knew the waters well enough to know where to look, but when we reached where they were, one was dead and the other was dying.

Fishermen are reminded of their lost bretheren everyday. You can see the *Lois Joyce* everytime you pass in or out of Oregon Inlet. Her remains are a ghost with real seas breaking to outline her. In the past year or so, the *Lois Joyce* has been nearly joined by other boats; I think of the *Cheryl Ann* and the *Darana R* because these two boats are named for their captains' loved ones in Wanchese.

The *Darana R* stayed aground for 3 days and was badly damaged. The *Cheryl Ann* was battered by a freak wave in the inlet. These tragedies do not happen quickly like an auto accident; they occur slowly and every moment is broadcast to everyone by marine radio. The real Darana R and Cheryl Ann probably listened; just as the real-life Lois Joyce listened when the boat named for her went down. I wish I could make you feel this hearing room floor rise and fall the way the deck does when you are in Oregon Inlet; it stops your heart and parches your throat.

Here in the Nation's capital, it is almost possible to forget that places like Wanchese even exist. We are so far from you, Senators, in time and traditions and lifestyle and experience. But something else separates us, too; and that is the other thing that scares me.

We feel we have been tricked and fooled and put on hold by Washington, but we are shocked to find that the opponents will stop at nothing to delay these jetties, including lies.

I said that my teacher on the water all these years had been necessity. A fisherman is a special kind of environmentalist; he has to be to survive. We depend on Oregon Inlet. The so-called environmentalists who have spoken on this project have only a commitment to a school-taught concept of how things happen in nature, out there. I understand that one of the leading opponents has not been to the outer banks in more than 3 years. They do not describe the environment we fishermen know or would want to live in.

They are so experimentally inclined everything they say begins with "maybe," "probably," or "could be." I call them "Mr. Maybe, Mr. Probably, and Mr. Could-be." I hope these subcommittees deviate from what we fishermen have seen so far to ask these so-called experts some tough questions about the forces of nature we take for granted on the outer banks. I know the fishermen are anxious to get a chance at questions like that.

Other than that, all I can do at my age is hold up to you here today, the generations of Etheridges—past, present, and future—and say enough is enough. The battered hulk of the *Lois Joyce* is not a fitting monument for America to show its fishermen and say: "We believed the lies."

Mr. Chairman, I thank you and if there are any questions you people would like to ask, I have over 50 years experience in the Oregon Inlet and will be glad to answer them.

Senator **Stafford**. Mr. Chairman, probably you would prefer to wait until all the witnesses have testified. I would like to ask Mr. Etheridge one brief question at this point. Do you own a boat yourself?

Mr. **Etheridge**. Yes, sir, I own and operate it.

Senator **Stafford**. More than one?

Mr. **Etheridge**. One, yes, sir.

Senator **Stafford**. How big is she?

Mr. **Etheridge**. Seventy foot.

Senator **Stafford**. She draws what?

Mr. **Etheridge**. Eight foot of water.

Senator **Stafford**. Thank you very much.

Senator **Abdnor**. I just want to say, Mr. Etheridge, we may seem like we forget Wanchese, but Senator Helms doesn't let us forget it.

Mr. **Etheridge**. Sometime if you come down with Senator Helms, we will be glad to show you our area. Thank you, sir.

Senator **Abdnor**. Thank you.

Mr. **Melvin Daniels**. The next witness is Comdr. Robert Williams, former director of Seafood Park.

## STATEMENT OF ROBERT G. WILLIAMS

Mr. **Williams**. Thank you. Mr. Chairman and members of the committee, I appreciate the opportunity to speak with you this morning. I serve as Governor Hunt's personal liaison for the Dare County Oregon Inlet Commission, and have been executive director of the North Carolina Seafood Industrial Park Authority and executive director of the Wanchese Seafood Industrial Park, and I have worked in that capacity and have lived with the political and physical vagaries of Oregon Inlet for the last 4 years.

Except for the fact of having confidence that the written testimony submitted by me will be perused and will be accepted at face value, I intend now to deviate from that to summarize.

Senator **Abdnor**. Again, let me assure, your statements are reviewed and made a part of the record, and we go back over it. Certainly feel free to summarize and go anyway you want to.

Mr. **Williams**. Thank you, sir. Echoing Senator Helm's comments this morning, the people of the State of North Carolina based on the belief expressed by the Congress in 1970 moved forward with the development of a Seafood Industrial Park in the expanded harbor in Wanchese. It was anticipated that $21 million of private funds would be invested and would create 620 new jobs in an economically depressed area.

Mr. Chairman, during our winter months, our unemployment rate reaches 20 to 25 percent. Last winter when the inlet reached a peak in treachery and unusability, the unemployment rate for Dare County was 42.1 percent. The creation of 620 new jobs in that area, the ability of our fishermen to get through Oregon Inlet and fish will do much to correct that situation and will protect the $8.1 million of public funds that have been invested in the Seafood Industrial Park.

And now speaking as a naval architect and referring back to some comments and questions that were asked of Mr. Vallianos, the vessels that we are speaking about, Mr. Chairman, are not large vessels, as some would have us believe and as may be portrayed, but by any stretch of the imagination, a trawler of 95 to 100 feet in length with a draft of only 11 feet is not a large vessel. The interior channels, navigation channels that are compatible with the use of such vessels would be 14 feet in depth. These vessels suffer from what we call squat; they go down on the stern when they begin to move forward. So to provide and accommodate vessels that have a draft of 11 to 12 feet, the interior 14-foot channel is fine, but once they begin to attempt to cross the ocean bar, and we see ship motions in action, the hydrodynamics dictate that you have a 20-foot depth of channel going through the ocean bar. This provides for the ship motion as the vessels go in and out.

Even at that, this provides only 80 percent usability. Twenty percent of the time it is projected and accepted by the commercial fishermen that this 20-foot depth channel would not be usable, but during that period of time, the weather outside would be such that they could not fish anyway.

It has been portrayed that this $100 million project to the taxpayers is actually a $600 million project. We have seen that written; we have heard it stated by those who oppose this project. But I feel that it is necessary when public officials speak to the general public and to their constituents that they speak in terms that are understood by those constituents.

If someone in the Washington, D.C., area is going out to purchase themselves a house, and we look around and find ourselves a $100,000 house, we get an FHA loan, we put 10 percent down, we amortize $90,000 over 30 years, we have been lucky and get ourselves a 15-percent fixed interest loan, we will come up with a payment of about $995, or so, per month, and we tell our friends we have bought a $100,000 house. If I looked at my wife, as we went into this project to purchase a house and I have lived in the Washington, D.C., area, and said, "Honey, this is the house we want; it is only going to cost us $400,000," she would turn around, look at me, laugh and walk off. So we are to look at this project in the terms that the people, the taxpayers of this country understand.

This $100 million project, is this our initial cost. We have about $4.2 million per year maintenance. So we say in purchasing a facility, one would expect to have 3 to 4 percent per annum maintenance and in amortization, we are talking about $7 million per year. Now these are terms that people understand and are real terms.

Even at that, we get a return on the invested dollar, a positive return on the invested dollar in addition to which we put 620 more people to work. We permit our fishermen with a tradition of 200 years, since colonial days, with a tradition of fishing back to work, permit them to stay in their area.

Mr. Chairman, I submit to you that the inability of the Congress and the Federal Government to make good on its 1970 promise of a stablized inlet has added immeasurably to the financial woes of our area and of the Seafood Industrial Park in Wanchese.

The concept remains intact; the place is right; the idea is right, but access to the sea must be gained if success is to be achieved.

Thank you, sir.

Senator ABDNOR. Thank you. Quickly, you are talking about the Seafood Park. How long has that been operating? Is that built on the strength of this project?

Mr. WILLIAMS. Yes, sir, as part of the 1970 authorization by Congress, there was a stipulation included in that congressional authorization that a non-Federal body, a non-Federal entity step forward, operate, maintain, develop, and maintain a seafood industrial park on the expanded harbor in Wanchese. This was part of the legislation because with the increased ability of catching and producing seafood, there must be a compatible increase in the ability to handle and process that food once it is landed.

Senator ABDNOR. That was built because of legislation?

Mr. WILLIAMS. Yes, sir.

Senator ABDNOR. Was there Federal participation in it?

Mr. WILLIAMS. The State of North Carolina and Dare County stepped forward and played the role of the non-Federal entity.

Senator ABDNOR. We have Federal dollars in that program?

Mr. WILLIAMS. Yes, sir, the manner in which that developed, Mr. Chairman, if I might, when the State of North Carolina and Dare County agreed to accept the role which was stipulated by the Congress, we developed a plan for use, we developed engineering plans, we developed the needs to handle the resources, and then went forward and using that Seafood Industrial Park and its concept and its projected resources, competed for State and Federal funds, as we would on any park, and on the merits of the Seafood Industrial Park, and the handling capabilities were able to gain several Federal grants and to gain appropriations from the General Assembly of the State of North Carolina who has expressed a great deal of confidence.

Senator ABDNOR. Would you make a guess? Could you give me an idea of how many Federal dollars went into it? Was it through EDA? What was it?

Mr. WILLIAMS. We had Economic Development Administration funds. In addition to those funds, we had Coastal Plains Regional Commission moneys for a total of $8.1 million.

Of that, $2.5 million were appropriated by the North Carolina General Assembly, about a quarter of the remainder from the Coastal Plains Regional Commission, which gave us the seed money for our engineering and initial land acquisition, and the additional funds came from grants from the Economic Development Administration.

All of those funds came to us as grants with no payback, and it was intended that the Seafood Industrial Park would operate with lease rates established such that there would be no additional appropriated funds required from either the Federal or State Government.

Senator ABDNOR. I want to throw this out, as you probably know, this Congress has a habit of doing a lot of authorizing without appropriating. I don't know how many million dollars' worth.

Mr. WILLIAMS. Our park is completed, Mr. Chairman. All the facilities are in place. There will be no additional funds required for the construction of the Seafood Industrial Park in Wanchese.

Senator ABDNOR. I guess I better move along. I see Senator East is here, too, and some others. I am going to ask you, gentlemen, again, if we could summarize as much as possible.

Mr. MELVIN DANIELS. If we may, we would like to defer at the moment for Senator East because we know his time is pressing.

Senator ABDNOR. Senator East, if you would come up. I am sure, you can tell we have had some fine testimony. Your constituents are doing a great job. We welcome you to the committee.

## STATEMENT OF HON. JOHN EAST, U.S. SENATOR FROM THE STATE OF NORTH CAROLINA

Senator EAST. I would like to thank you for chairing these hearings and also for Senator Chafee for joining in your joint effort this morning, and I am grateful for the opportunity to be here and speak briefly on behalf of this project.

I have a printed statement. I would appreciate the chairman allowing me to enter it into the record.

Senator ABDNOR. I have already made it a part of the record.

Senator EAST. What I would like to do, lest I waste your precious time and other Members here who desire to testify, is to summarize extemporaneously, if I might, what I think are the key points that I would appreciate your subcommittee and the committee as a whole keeping in mind as you weigh the relative value of this legislation.

I do wish to state publicly that I applaud my distinguished colleague from North Carolina, Senator Helms, for spearheading this project and being the point man in this legislation. I am here to supplement and underscore my commitment to you and the great value that it would bring to this area of North Carolina and, indeed, to all of our State and I think much of the eastern seaboard.

As you are well aware, Mr. Chairman, this legislation will do nothing more or less than authorize the Corps of Engineers to utilize land currently under the jurisdiction of the Department of the Interior for purposes of anchoring jetties at the Oregon Inlet. Now why is this so valuable to Senators and Governors and Congressmen from North Carolina? Several compelling reasons, I would offer, Mr. Chairman, and I am sure that some of the ground has already been traced, and I apologize if I am retracing it, but perhaps stress these are critical points we are all agreed upon.

In the Rivers and Harbors Act of 1970, this project first began under authorization of congressional legislation as a navigational project. In that legislation, it was specifically identified that the construction of jetties would be a means by which this inlet, this Oregon Inlet, would be stablized. I think fairly to understand, the people acted in reliance upon that. The Seafood Park was developed. Fishermen began to expand their activities, go into larger vessels because Congress had indicated, in my judgment, a moral commitment to do something that it was generally understood by all who appreciated the problem that this would allow the Oregon Inlet to remain an open and free inlet for the use of fishing vessels, commercial or those who might be involved in sports fishing.

Since this time, as I say, these people have acted in reliance upon that legislation, and I think there is a moral obligation to consider that dimension of it. It isn't as though they reacted on their own, crossing their fingers, hoping against hope that Congress might do something. Congress indicated in 1970 it would do something and it specifically indicated it would build jetties.

We are simply now trying to stitch together the jigsaw puzzle that would allow us to do that.

A condition precedes to building any jetties is to have the land upon which they can be anchored and that is the sole and exclusive issue, as I know the distinguished chairman understands, that this bill deals with. There has been concern expressed, and I understand it, by certain environmental groups and others, that this is not a wise thing to do, and I would like to comment briefly upon that.

It is not a frivolous point. All of us in North Carolina like to think of ourselves as environmentalists. We have a beautiful State—the coast, the mountains; we depend upon tourism, many other things related to a clean and healthy environment. I would note here that no one in a profession lives closer to the environment than commercial fishermen. We are not talking about here now bringing in some giant smokestack industry. We are talking about carrying on a great cultural heritage that goes back to 1583, the Lost Colony. Virginia Dare was the first child born of English parentage in the New World. She was born right in this area. It goes back to Sir Walter Raleigh and the Lost Colony. The fishing industry has been a vital part of the economy, the culture and the heritage of these people since that time, and no one—no one—has lived closer to the environment or appreciates more its value than they.

Clean water, fishing, all depend upon a healthy environment. So I don't think we have a case here of the environmentalists and those opposed to them, we are all environmentalists, and so are these fine people from this area.

The point is, Mr. Chairman, that sometimes we may forget that man is a part of the environment. He, too, lives on this planet and must live and move and have his being. And in this case, he is a fisherman, a proud profession, proud culture, proud heritage, going back nearly 400 years. It goes back 400 years. Anyone who has been in this area, anyone who has spoken with the natives of this area note the distinctive accent, back to Elizabethan England.

So I would submit on the environmental argument that they, of all people, need not be embarrassed or have it be implied that they are in some way or another opposed to a healthy environment. They, above all, would support it because of the fishing. What they are saying is they, too, culturally and historically are a part of this environment and it has been a natural thing since the beginning of time for people, man as a part of the environment to develop navigational aids—channels, better ships, et cetera.

It is not new; it is not inconsistent with the environment, and I am simply suggesting these jetties lie well within the framework of that argument and that contention.

In order to make this inlet safe for commercial fishing vessels and/or sports fishing, to guarantee that it is a safe and stable and viable navigational channel, the Corps of Engineers has repeatedly stated, and I have been before groups where they have appeared, I have heard them give their expert testimony, they have concluded as an engineering matter the only way you can guarantee that is through jetties. You can have all of your sidecaster dredges, your hopper dredges. They can maintain a minimal passage, but it is the jetties that the experts, Corps of Engineers say you need in order to keep this channel open and functional. That it no longer then would be a danger to ships, which it is now.

The experts on this subject have said there is no other viable alternative.

And one final point I would like to make, Mr. Chairman. I promised to be brief and I may have overstated myself in so doing. It would bring a great economic benefit not only to this area, not only to North Carolina, but I would like to point out that economically in terms of balance of trade and the world trade today, we are generally behind—we know that—and we are particularly behind in the fishing industry. There is a billion-dollar-a-year trade deficit. We all want a vibrant and expanding economy in this country, and that certainly ought to include the fishing industry.

And one vital thing that could be done to try to close that trade deficit is to permit these jetties, allow these jetties construction to be begun, to be completed, and we can begin the very real task of closing that great deficit, and I would submit that in the near, and particularly the long term, this investment would well pay for itself, again, not only because of the economic development in eastern North Carolina and coastal North Carolina, but for the whole seafood industry which has historically been one of the great vibrant industries of the whole eastern coast, the whole coastal areas of this country.

Mr. Chairman, I thank you for allowing me to appear. I think the members of this panel for allowing me to interrupt, but I did not want to be remiss and let the opportunity pass by whereby I might come and indicate my strong and abiding support for this legislation. I think it is warranted; I think it is justified and we will deeply appreciate the distinguished and able chairman of this subcommittee and also, of course, the distinguished Senator from Rhode Island, Senator Chafee, of this joint Subcommittee on Environmental Pollution and Water Resources give careful consideration of this measure. We will be so hopeful and ultimately, of course, I would say finally grateful if you see this prudent. Thank you, Mr. Chairman.

Senator ABDNOR. Thank you, Senator. I know your constituents are very pleased with that testimony. As usual, you so eloquently expressed the whole situation. I am sure they appreciate it, we appreciate it, and thank you for coming.

Let me say to the panel, I see it is now 18 minutes to 12. We are going to have to step this along because there is still another panel to hear.

Who in the previous group are still to be heard from?

Mr. MELVIN DANIELS. Mr. Chairman, we have four speakers for brief remarks.

Senator ABDNOR. They are going to have to be brief. I hate to be rude but it's getting late and the other group wants to testify. They have come a long way, too. Let's hurry it up. When I say summarize, I don't want to be difficult, Senator East. I have got to move it along.

Senator EAST. Thank you, Mr. Chairman.

Senator ABDNOR. Thank you. Again, I just remind you, we have to move along

Mr. MELVIN DANIELS. Thank you. Our next witness is Mr. Harry Schiffman, Oregon Inlet Commission.

## STATEMENT OF HARRY B. SCHIFFMAN

Mr. SCHIFFMAN. Mr. Chairman, I will summarize. During the hearing on H. R. 3082 held last week, opponents made false statements about the jetty project and the status of the fishing industry and potential impact with or without the project. While we assume these statements were made in good faith, it is our contention that the record should be made clear.

The following are quotes from opponents' testimony which are in error and the facts will refute those statements:

Opponents have said, "The corps has ignored viable alternative, hopper dredge, by insisting on an undemonstrated need for a 20-foot-deep channel." The fact is that 14 feet is adequate for the interior navigation channels only but is not an adequate depth for the boats that are attempting to fish out of Oregon Inlet. These folks draw between 11 and 13 feet with a load, and any inlet swell greater than 2 feet places these boats aground in a 14-foot channel.

Opponents have said, "In 1983, the corps contracted for the first time a hopper dredge to construct and maintain a channel through Oregon Inlet." The fact is that the Corps of Engineers used hopper dredges in addition to sidecast dredges in the past.

Opponents have said, "Intensified channel dredging offers a reasonable alternative to jetty construction." The fact is that the Corps of Engineers has conducted extensive studies on intensified dredging alternatives and has concluded that such a plan is unfeasible as it would result in unacceptable erosion on Pea Island.

Opponents have said, "The compromise is already in place and so far it is working. The corps contracted for use of a private hopper dredge and succeeding profiles of the channel bottom confirmed the dredge was producing a far better channel than had ever been established by the old sidecasting dredges." The fact is the hopper dredge contracted had to be extended in an attempt to achieve project width and depth and these dimensions were never attained.

And in less than 30 days, after the hopper dredge left, the channel lost 2 feet in depth and a great deal of width.

Opponents have said, "But has the corps or the Oregon Inlet Commission or the local newspaper ever contrasted the $3.4 million proposed for sand bypassing with a lesser annual cost of dredging over the past decade?" The fact is that the corps estimates spending $14 million annually to dredge constantly. During the past decade, dredging has never succeeded in maintaining a channel as authorized and the cost in terms of lives and vessels lost has been devastating.

Opponents have said, "The wildlife refuge's beach is used by tens of thousands of people annually." The fact is while tens of thousands of people do use these beaches, hundreds of thousands of people traverse Oregon Inlet for recreational fishing and diving.

Finally, we must address misconceptions of those who admittedly are not fishermen and have reported data about squid and pinfish which cannot be substantiated. The fact is as access through Oregon Inlet lessens, so did pinfish landings in North Carolina.

Finally, and in sum, a 42-percent unemployment in the winter and spring of 1983, the reduction of commercial fishing fleet from 200 boats to less than 20 boats, the closing of our only metal shipbuilder, all 4 electronic firms, and the first 10 of Seafood Industrial Park in Wanchese, and damages to charter boat fleet and recreation and boating, losses incurred by the State of North Carolina costing some $8 million.

The National Wildlife Refuge is threatened by accelerated erosion, and the ill effects being felt by every business in coastal North Carolina are a few reasons why we request your support. For the people of North Carolina and adjacent coastal communities, as well as people from afar, the time has come for your assistance in making this possible. Please, if you have any doubts, come to Oregon Inlet and see for yourselves.

Senator **ABDNOR**. Thank you.

Mr. **MELVIN DANIELS**. Captain Orvin Midgett.

## STATEMENT OF ORVIN A. MIDGETT

Mr. **MIDGETT**. Mr. Chairman, members of the subcommittee, I will sure rush along. I don't think any of my statement will be repetitious. The people that I would represent and myself have a little bit different mission from the rest. We realize their need, which is greater than ours. Ours is something maybe you haven't heard from at least in this subcommittee. I am a charter boat operator from Oregon Inlet on the Outer Banks of North Carolina. I am also a member of Dare County's Oregon Inlet Commission of Manteo. I know that I speak not only for myself and my charter boat friends, but also for the hundreds of private and recreational boatmen, small boat operators, outboards, small commercial fishermen and, frankly, everybody who uses Oregon Inlet, I think, would be the message they would impart.

I have come here to tell you it doesn't really take me 5 minutes to tell you what we need. We, frankly, basically need some help and some understanding.

We need your help because really we can't do the job ourselves. We have tried through the years to get people to loan us an ear and so far I think we are gaining a little bit, but we haven't gotten the goal we hope one day will be gotten if what has been done already in money and paperwork and study and expense could be here today, why, we would have to move out of the room to make room for it.

Sports fishermen have been working out of Oregon Inlet for over 50 years now, and they have been awaiting what may some day come, but never has come yet, a safe, deep, wide inlet to pass through to open sea. We learned much earlier when we were getting into this we would have this one day, but, frankly, the time never comes, and once again, we need your help.

There are members right here today of the opposition of this bill that would, in my opinion, sell us down the river. I have read where they think that it doesn't really even matter, and I have it here in my folder, but I won't go through it now, if the inlet were even to close up, I don't think it would really matter to them or to our large group what they would do to us.

I operate my sport fisherman, but out of Oregon Inlet fishing center just a mile through the channel through the bar. Our inlet right now is very narrow, shallow just about all the way across except for one cut and dangerous even to the everyday experienced boatman who goes through there all the time, and certainly deadly to the not too experienced, weekend boatman that is there so often in the summer.

There are about 50 vessels in this same marina who share this passage and 35 of them are charter boats who run, I am going to say, an average of 125 trips a summer. This year at $500 a trip, that would generate well over $2 million annually. But we think the income from these boats and the amount of people it has hired and the public we take care of is worth saving, and we feel like with a deep, stabilized inlet, we can save not only what is happening now there, but for the boats that would join us from the extra trip we get from it.

We are the inlet, really, for a long way south and north of us where we can go to catch the kind of fish we are after that the sportsmen come to fish for. We are not going out 5 or 6 miles in shore waters catching what little bit you would find there. We are going to the Gulf Stream. Our inlet is the closest inlet to the Gulf Stream north of Florida, like only a 35-mile trip. If we had to run down or up the coast to get there, we would never make it on a daily boat like we have. Our cost is great enough now and fuel and everything else; if we had to go for longer trips and more than 1 day, I don't think the public would stand it. We would be out of business without Oregon Inlet.

Very recently, I stopped my vehicle atop Oregon Inlet Bridge and looked out across the inlet. It was a pretty time generally. There wasn't a whole lot of swell, but I saw right then were it not for this one little cut the dredge recently made and trying to maintain that I couldn't get through that inlet. That has changed a lot in the last few years. Things are changing. There is only one place you can get through it now. If time permitted, I could go on and on telling you about how improved Oregon Inlet would benefit us all. I do hope that in some point in time you will have time to ask me my views on improving the water quality in North Carolina, Oregon Inlet safety valve, a boon to recreation would result if we can improve, stablize, and deepen Oregon Inlet.

I, frankly, thought about this whole thing, listening to everybody's testimony, and I feel like some people are way off base and others are repetitious in telling you how we need this thing, but we really need it and looking at everything involved, I, frankly, see no harm at all by what is proposed in S. 1471, and I am really counting on you people for the commonsense and understanding and the compassion that we people need.

I thank you, gentlemen.

Senator ABDNOR. Thank you, Mr. Midgett. I appreciate your testimony, and I know you are sincere.

Mr. MELVIN DANIELS. We will move on. Capt. Mickey Daniels.

## STATEMENT OF MICKEY DANIELS

Mr. MICKEY DANIELS. Thank you, Mr. Chairman. I am a native of Dare County. I am one of 15 children who operate a family-owned fishing and packing facility. There are 11 boys and 4 girls, the majority of whom are still trying to operate the business. I guess we could have given up years ago, but, Senator, it is hard to give up something you were raised doing.

I started to work at the fish house at the age of 6. Coming from a large family, everyone had to pull their weight. My first job was to ice boxes because I wasn't strong enough to lift the boxes or weigh the fish. Yet, through the years of straining and getting stronger, I worked up to stacking, sorting and eventually delivering and selling the fish to New York, Baltimore, Philadelphia, and other northern and southern markets.

We started out with one trawler, a 65-foot Army T which we converted to a fishing trawler. Over the years, we worked hard and listened to politicians who told us that Oregon Inlet would be jettied and that the fishing industry was going to grow. We started to purchase bigger boats and eventually signed contracts for boats that could fish in a greater depth of water for squid, butter fish, hoke and mackerel.

Mr. Chairman, we are proud people. We aren't asking for a handout. What we want is what we are entitled to—a chance to work for a living.

I wish you would come down and let us show you what we are talking about. Experience the anxiety we are feeling. For example, what if the 14th Street Bridge was torn down and replaced by a swing bridge with no lights; consider that it was totally impassable at night, you could only cross it twice a day with 2 hours across each time. I wonder how many days would you miss because of fog, rain, sleet, snow, and wind? Mr. Chairman, that is what we are up against. We don't get paid by the day or the week. We only get paid by the amount of checks we bring in. There is no retirement, health benefits, or pensions. I would like to submit the rest of it. Thank you very much.

Senator **Abdnor**. Thank you very much. You make a good point.

Mr. **Melvin Daniels**. We are drawing to the magic moment you are looking for, our concluding witness, Colonel McDonald, former member of the corps, recognized as one of the experts in stabilization.

## STATEMENT OF DANIEL E. McDONALD

Mr. **McDonald**. Mr. Chairman, I need only 4 minutes for a highly condensed version of the written statement I submitted for the record.

I am Dan McDonald, specifically, a retired officer, U.S. Army Corps of Engineers, a retired employee of the State of North Carolina, and a part-time consultant. From 1976 to 1982, I served as the State's project manager on the Wanchese Harbor Development Project with primary responsibilities for project funding, planning, design and construction. I speak now as a concerned citizen in behalf of the Dare County Board of Commissioners, the Oregon Inlet Users Association. It has been pointed out this project was authorized in the Rivers and Harbors Act of 1976. Since that authorization 13 years ago, design has been essentially completed and partial construction has been accomplished.

Further construction is stymied by the nonavailability of certain lands under jurisdiction of the Department of the Interior.

Now the position of the Department of the Interior was stated in a letter dated September 9, 1980, from the Assistant Secretary of the Interior for Fish and Wildlife and Parks to the Assistant Secretary of the Army Civil Works. That letter included these three statements:

One, "This department is unable to issue permits to the Corps for the construction of a project that utilizes jetties." Two, "We believe it is necessary for the Corps to obtain additional authorization from the Congress, including the appropriation of park and refuge lands, before this project may proceed." And, three, "The most appropriate means of conflict resolution is further explicit action by the Congress."

S. 1471 is consistent with the stated position of the Department of Interior. It simply proposes congressional authorization for the Corps of Engineers to use the lands in question as necessary to implement the project authorized by the Congress in 1970.

Much of the arguments surrounding this has been on the emotional plane where objective analysis is barred. In total objectivity, I want the focus of four basic questions that you form a central theme of any project analysis:

No. 1, is there a public need for the project? No. 2, will the project, as planned, satisfy that need? No. 3, does the public need for the project, along with projected benefits, justify total project costs? No. 4, what impact will the project have on the environment, and how does this impact relate to project benefits?

Regarding question No. 1, the need for reliable navigation through Oregon Inlet for the passage of both commercial trawlers and pleasure craft, has been clearly demonstrated. The need has also been dramatically emphasized in the loss of lives and properties. Commercial fishermen have proven the potential capability of Wanchese as a major seafood port. With reliable navigation through Oregon Inlet, commercial fishing operations at Wanchese will greatly expand, bringing significant economic benefits on a local, regional, and national level. Without a navigable inlet, commercial fishing operations at Wanchese will virtually cease.

Nationally, with the possible exception of the Pacific Northwest, our commercial fishing industry is not in a healthy condition. While our nation continues to import a greater percentage of the seafood we consume, we are largely neglecting our commercial fishing industry. Strengthening this industry is a national necessity. Support for the industry at Wanchese is an important step in this strengthening process. There is definitely a public need for a stablized Oregon Inlet.

Regarding the second question, I am confident that the Manteo [Shallowbag] Bay project as planned and authorized will, when constructed, satisfy the need for a stablized Oregon Inlet.

Regarding the third question, the need for a stablized inlet is of national significance and priority. The projected benefits are substantial. The project costs are high. There is no way to put these three facts into a computer and obtain a universally accepted answer as to whether the needs and benefits justify total project costs.

Regardless of what evolves from any computation of a benefit-cost ratio, the result will be challenged and probably argued in perpetuity. Rather than argue statistics, I prefer to advance the proposition that enhancement of the commercial seafood industry, which is a major objective of this project, is vastly more important to our Nation's welfare than, for example, the doling of tractors to rice farmers in Vietnam, only to have the tractors mire and rust. The need to help our own people, in this case our commercial fishermen, who are working hard to keep a vital industry alive, certainly transcends the need, if indeed a need exists, to give monetary sustenance in other countries throughout the world.

Regarding the fourth and final question, I am an environmentalist in the true sense. That is, I am dedicated to the protection and wise utilization of our natural resources. What I am not qualified to engage in is the academic rhetoric that seems to prevail among so-called professional environmentalists in addressing this project.

As a practical engineer, I view much of this rhetoric as being quite ridiculous and I question the underlying reasons for such nonsense.

In summary, I would reiterate my conviction that the Manteo [Shallowbag] Bay project when constructed, as authorized, will satisfy the need for a stabilized channel through Oregon Inlet and that the need is of national significance and priority. This project is not a pork barrel, welfare, or food stamp project. It is a project that will enable a goodly contingent of our Nation's commercial fishermen to not only make a living for themselves, but to also contribute materially to our Nation's commercial fishing industry and, thus, to the economy in general.

This project offers a golden opportunity for members of the academic world who write papers and gain coveted publicity. It invites attack from groups and organizations hellbent on furtherance of their special interests in apparent disregard of the public interest.

Mr. Chairman, I hope the committees will critically examine the real motives behind these expressions of opposition, and that you will test the validity of the arguments being advanced.

Noah, in his ark-building project, probably had to contend with such critics and wholesale criticism, but the ark was built and Noah's severest critics probably had to admit that the project was sound and worthwhile.

I respectfully urge your approval of S. 1471. Thank you very much.

Senator **Abdnor**. Thank you, Mr. McDonald. That concludes the panel. It is now 12 o'clock. We are going to keep going because I would like to be fair about this. I tried to give you gentlemen as much time as I could and in fairness to the others, and this is a fair committee, we hear from all sides. I will ask the next panel to go through the noon hour.

Mr. **Melvin Daniels**. Thank you, the committee, Senator Helms, Senator East. We appreciate your hearing our cause.

Senator **Abdnor**. We have very high regards for your Senators. They let me know about this project a long time ago.

I will now call up our second panel, Dr. Stan Riggs; Ken Hunter; George Deems; Ed Osann; and a representative from the North Carolina Wildlife Federation.

Who will be the spokesman? Dr. Riggs did not make it, as I understand it.

Mr. **Osann**. The North Carolina Wildlife Federation intended to have somebody today. They will be submitting a statement for the record.

Senator **Abdnor**. That is fine. We will keep the record open for several days for anyone who would like to submit statements. Will you go ahead and start us off?

Mr. **Osann**. I think Mr. Hunter is going to start.

## STATEMENTS OF KEN HUNTER, CONSULTANT; GEORGE DEEMS, NORTH CAROLINA BEACH BUGGY ASSOCIATION; AND ED OSANN, DIRECTOR, WATER RESOURCES PROGRAM, NATIONAL WILDLIFE FEDERATION

Mr. **Hunter**. Yes, Mr. Chairman, I would like to begin by quoting from an exerpt from the environmental statement for the Wanchese Harbor development project prepared by the Army Corps of Engineers in March 1977. It appears on page 165 of the hearing record of the House Merchant Marine and Fisheries Committee, a hearing of August 3 of last year:

"The State of North Carolina has made the determination that development of Wanchese Harbor is economically viable without—without—stabilization of Oregon Inlet."

This declaration was prefaced by an assurance from the Corps of Engineers that "The Harbor and associated facilities will not be used to justify stabilization of Oregon Inlet." Of course, the statement of the corps has been doing precisely that ever since.

The Wanchese Harbor development was off from the inland, the Manteo [Shallowbag] Bay and went ahead and collected about $5 million or more in Federal subsidies and trying to bootstrap this Seafood Industrial Park into a $100 million jetty cost at construction, $600 million, 50-year life cost as confirmed by figures the Army Corps of Engineers gave in testimony just last week.

There is an interesting development that has happened in this channel in recent years. When it was at a 14-foot authorization and boats were going back and forth, in 1979, Mr. Chairman, the landings of seafood in Dare County were 35 million pounds. In 1980, 41 million pounds. In 1981, 39 million pounds. In 1982, 32.5 million pounds. These are particularly interesting because they range from 10 million to 18 million pounds annually more than what the Corps of Engineers economic analysis had predicted, projected would be caught of traditional fish, high value fish that have American markets; fish such as flounder, sea trout, blue fish, croaker. These figures do include fish that would be caught in the sound and not brought through the inlet, such as crab and oyster.

However, I have been advised by people at the National Marine Fisheries Service that the great increase that took place in 1979, 1980, and 1981 was attributable primarily to seafood that would be brought through the inlet in the winter from the sea through a channel that probably was not maintaining even 14-foot clearance.

Contrast that with the 22.5 million pounds of these kinds of fish that the corps was predicting would be brought into Dare County after they built the jetties.

The other half of the Corps of Engineers' development scenario, so-called nontraditional fish, not flounder, but squid, not sea trout, but sea herring, not croaker, but butterfish and other so-called nontraditional fish. The central piece of evidence from which the Corps of Engineers constructed the economic development scenario for this project was based on what they believe to have been a catch by foreign fleets of these nontraditional fish of 350 million pounds of fish; nothing like that happened anywhere near Oregon Inlet. The two sectors of the ocean that they said it referred to, the catch was one-third of that.

On top of that, Mr. Chairman, the corps neglected to superimpose the 160-mile radius outside Oregon Inlet which they had stipulated in numerous places and other places of their documents to be the commercially feasible range for going after these nontraditional fish.

In the area that is closest to Oregon Inlet, Mr. Chairman, the fleets in 1976, the base year the corps said they were using, caught 7 to 9 million pounds of fish. It is inconceivable, Mr. Chairman, that they could have caught more than 20 million of these nontraditional fish within the whole of the 160-mile radius.

Assistant Secretary Giannelli agreed that the corps had made "a fundamental error" and had the economic analysis scrapped. That was back in the summer of 1982. A 330-million-pound error, I submit, is very fundamental, and it was critical to the economic justification of this project because this nontraditional fish reconstituted 70 percent of the value of the entire package of benefits they had identified for this project. So one moment they had a 1.4-to-1 benefit ratio. Ken Hunter walked into the Assistant Secretary's office in June of 1982 and gave them a copy of an unsolicited analysis of their economic justification and by September of 1982, in a letter to Senator East, Assistant Secretary Giannelli was agreeing they had made a fundamental error and they were sitting there with a 0.34-to-1 benefit-cost ratio, which leaves them $400 million in the hole on a $600 million, 50-year life cost.

The economic analysis was supposed to be made available by the end of March 1983. It is still missing. We heard this morning that they hoped to have it ready by June 30, 1984. That will make it more than a year overdue. Mr. Vallianos repeated a phrase that he used in the Merchant Marine and Fisheries hearing when he talked about giving coequal consideration to the integrity of the beaches and we were particularly talking, I believe, in his discussion today about the slough floating breakwater of which there has been considerable.

I would like to show you a picture from the merchant marine's record of the slough forward breakwater. May I approach you?

Senator ABDNOR. Yes.

Mr. HUNTER. That is from the corps' general design memorandum of 1980. It is an artist's sketch. That is all they had to show for the slough floating breakwater.

In the same document in the back was an elaborate collection of drawings and diagrams for the jetties. In the text of the general design memorandum, they made clear, that they did not know and had to do considerable more model testing, field testing, and physical model testing to find out such things as structural integrity, motion characteristics, mooring systems, and wave suppression efficiency.

We heard testimony this morning that they have been progressing on that, but I would ask, Mr. Chairman, how much more do they now really know about structural integrity, motion characteristics, mooring systems and wave suppression efficiency, and yet they describe this as the main component of "the essential sand bypassing system" without which they agree the project could not be considered a success.

I do not, I submit, agree that the Corps of Engineers gave coequal consideration to the integrity of the beaches in their planning for this project.

As we noted when we came up, Dr. Riggs is not present. He is a geologist at East Carolina University. He does have a statement that he presented to the House Interior Subcommittee, as did Dr. Orin Pilkey, who is off on a research vessel this week, and he could not be here either.

Senator ABDNOR. Will you see the record is given a copy?

Mr. HUNTER. I cannot tell you a great deal of particulars and certainly would not try to take the place of Dr. Riggs and Dr. Pilkey. I would like to show you a picture of Assateague Island in Ocean City, Md., and accompanying that is a map of what a geographer at the University of Maryland, who is a specialist in barrier islands, says this place is going to look like by the year 2000. The magazine is Discover magazine, a Time-Life science publication. The front of an article in their September 8 issue is an aerial view of Assateague National Seashore looking over Ocean City. You can see the jetties there; you can see the beaches have been eroded back terribly in the last 50 years since that inlet was opened in a hurricane, and the jetties were built there.

Dr. Steven Lederman, a geographer, a specialist in barrier islands, at the University of Maryland has prepared this map for the Park Service, I believe, and it shows that by the year 2000, it is reasonably safe to be expecting that you would have lost about the upper 2 miles of the beach along there. That is what the jetty has done at Assateague and they had that jetty there about 40 or 50 years.

More recently, the Army Corps of Engineers built a state-of-the-art jetty near my hometown in Daytona Beach, Fla., Ponce de Leon Inlet. This, I think, went up in the late 1960's. On January 27, 1984, the day that we were testifying over on the House subcommittee, the local newspaper was publishing an article about how the Ponce de Leon Inlet Authority has issued an emergency resolution calling for help in repairing the channel between these jetties because "at least 50 shrimp boats have gone aground in 1983 and another boat has completely broken up."

The Corps of Engineers itself had issued January 20 an advisory that requests all mariners being advised that the shoaling in Ponce de Leon Inlet channel has increased and shifted thereby reducing the usable width of the entrance channel; December 1983 surveys indicate the 12-foot mean low water contours moved northernly as much as 100 feet in several places since 1982, and further warns that they exercise extreme caution entering and departing the inlet.

This is of particular interest to me, Mr. Chairman, because that, as I mentioned, is my home inlet and I do feel it has some relevance to the issues at hand here. But I am also personally interested because right out of college as a reporter for the local newspaper I wrote a hype piece that I am sure they found very useful in their kit of going up and getting authorizations and appropriations to build those jetties.

We talked about how the hopper dredge had worked in Oregon Inlet this last fall and the suggestion, I think, may have been left with the committee it had not achieved authorized dimensions. It does appear that it has not achieved the 400-foot width which is the authorized dredging matter. When the hopper dredge left just before New Years, however, there were depths running through the length of that channel in excess of 20 feet. Nobody ever said that there would not be deterioration in the kind of channel that would be established by dredging. But the idea is that if a 14-foot deep channel is something that would be serviceable as, indeed, the fish catch records of 1979, 1980, 1981, and 1982 strongly suggests they would be, what you should do is get a hopper in there, establish an overcut channel and maintain it with the sidecasting dredges through the year.

Of course, there is going to be deterioration. That means it is going to begin to fill up and it is going to get somewhat narrower. If you have got the kind of situation that you had there at the end of December when the hopper left, I submit that you may have a very workable solution there. When it was said that the corps has estimated $14 million annually to dredge Oregon Inlet, that presupposes a 20-foot deep channel, 400 feet wide that would be established and maintained constantly by a very aggressive dredging program, and I think the real question is whether that is all necessary.

Let us hope it is not because it would be a very major effort to have to try to do.

The Corps of Engineers was referred to as having made a dredging feasibility study quite recently. They did, indeed. I have read it, Mr. Chairman. I have a copy of it, but it has not been released to the public. It is an interesting document in one particular regard because of a table where they talk about the amount of sand that would be captured by channels at various depths. A 20-foot deep channel supposedly would capture, according to this product of a model examination, 100 percent of all the sand that would be trying to naturally bypass where as at 14 feet, the capture of sand would be only 22 percent. That means, Mr. Chairman, that 78 percent of the sand that would be in the system would be able to naturally get past a 14-foot deep channel and you have a much more manageable situation.

I have other things to say, but I hope you will ask me about them.

Senator **Abdnor**. I have got an appointment I have to keep so we are going to have to move. I would like to give you all a chance, if we don't get questions asked here, we are going to submit them for the record.

## STATEMENT OF EDWARD OSANN

Mr. **Osann**. For the record, I am Edward Osann. I am director of the water resources program, National Wildlife Federation. I have a brief statement; I will not read it. I think we should be clear as to what this legislation is all about this morning, Mr. Chairman. The bill that is pending before the committee will clear the way for this project. We simply can't look to the Appropriations Committee for either restraint or oversight in the annual appropriations process in their considering 200 to 300 water resources projects around the country.

So, in that event, this bill pending before the committee would, in fact, clear the way for construction of this project. I also note that although the jetties are not now under construction, appropriations were first provided for this project in fiscal year 1980, thus the project is not going to be subject either to the cost sharing or environmental performance that are contained in S. 1739.

Second, the economic feasibility of this project has not been demonstrated. I think the committee has taken testimony on this point this morning, and I just say that enactment of this bill at this time would send the wrong message to the men and women of the Corps of Engineers who are trying to do a conscientious job in the evaluation of these projects, clear the way for construction of the project at a time when its feasibility has not been demonstrated would be a mistake, in our judgment.

Third, the environmental acceptability of this project is premised upon the effectiveness of the sand bypassing system, and simply proposing a sand bypassing system does not insure that extensive dredging will not be necessary or down drift erosion will not be severe.

Mr. Hunter has cited problems with recently completed systems at Ponce de Leon Channel in Florida. There are other sand bypassing facilities that have been constructed by the Corps of Engineers on the east coast. We cite some of those in our testimony. Generally, they are less dynamic areas than the Oregon Inlet. I think there is on record perhaps less reason to believe that the proposal that has been developed by the corps would be more effective than these examples that we cite.

Finally, I just say notwithstanding the public officials from North Carolina that the committee has heard from, the opinion within the State is, in fact, divided. As I mentioned, the North Carolina Wildlife Federation will be submitting a statement for the record. I also note attached to our testimony is an editorial from one of the State's leading newspapers, the Raleigh Observer, taking issue with the Oregon Inlet project. Thank you, Mr. Chairman.

Senator **ABDNOR**. Thank you, Mr. Osann. Our last witness is Mr. Deems.

## STATEMENT OF GEORGE C. DEEMS

Mr. **DEEMS**. Thank you, Mr. Chairman. I think I would like to make it clear to start with——

Senator **ABDNOR** [interposing]. Will you bring the mike a little closer, please?

Mr. **DEEMS**. I would like to make it clear to Captain Midgett and the others from Dare County that the North Carolina Beach Buggy Association is not any of those who say we shouldn't have an inlet at all. We feel very strongly that the inlet should be stabilized and be safe for the fishermen from Wanchese and other people. I guess the greatest difference in our thinking is how this stabilizing should be obtained.

Incidentally, there was mention of unemployment in Dare County. I believe the Coastal Times last week stated unemployment for Dare County in December was 14.5, so there is an improvement there. But we are the users of the beaches that we feel will be lost. And after a great deal of study, the material is listed on the first page of my written statement, both from the Army, scientists, and so forth, we joined with a good number of other organizations of the character of our own—the United Mobile Sport Fishermen, national organizations that felt that the construction of jetties would do harm to the beaches at Oregon Inlet.

Recently, the Virginia Wildlife Federation has supported the North Carolina Wildlife Federation and the National Wildlife Federation. The first thing we think about is the loss of these, we might say, irreplaceable beaches at Oregon Inlet. The National Park Beach and the Wildlife Beach, these beaches have been used by present, and we hope by future generations for all types of recreational use—surf fishing, crabbing, hiking, and so forth.

We don't quite believe these beaches will be nowhere the same after these jetties are constructed, and I might mention there, it is a little hard for us to understand how for 6 and 7 years the corps had a definite plan of how these jetties should be constructed. Then in May 1982, they were changed. They went from 2,500 feet in width to 5,000. The height of the jetties were dropped and now I understand they have a third plan that brings the width back to 2,500.

I sort of get the feeling maybe they just don't know what they do want. The engineer experts say there is a layer of silt under here that won't hold the rocks. Maybe that is why they have done this changing. In other words, I think the committee should be aware of these change of plans that no one seems to know exactly what the design should be.

Of course, from a scientific standpoint and I certainly am not a scientist, but we do look at the Ingan Report II and the economics of Oregon Inlet, but I would like to have the committee include in the record this report which is made by four or five scientists that studied this project.

Senator ABDNOR. That is pretty sizable for the record. We will accept it for the files.

Mr. DEEMS. I wanted to bring to your attention, here is a scientific report that spells out long term, short term and intermediate what they think will happen to the beaches, that the jetties will cause erosion for some great distance on each side, and we are also concerned with the replacement of the material, and so forth, how it is left on the beach and the fact we won't be able to use the beach.

Senator ABDNOR. We will use it.

Mr. DEEMS. It is in Congressman Jones' record, and that has wide distribution. Mr. Hunter has touched on the benefit-cost ratio. We wondered about some of the methods. We had one surf fisherman tell me they counted one boat 10 times; it went to the bridge and drifted back to the sound and never went out in the ocean. We suggest that if they would put their telescopes on the ocean side of the bridge, they would know exactly who went in and without and didn't use it.

There has been question there of boat owners about using Oregon Inlet. There was a questionnaire that went around. One of the statements was we are not interested in the quantities of fish that you took back and forth but only how many trips you made. I get the feeling that they are groping in the dark to come up with a good feasibility study. I think there are some conflicts in this program that should be looked at.

In the final environmental statement of the corps on page 5, and it is backed up in many studies and repeated, the question was asked, will you use Wanchese to try to get the jetties, and the answer was no, no, no. This isn't one place, it's a dozen places.

I submit that is all they have done since that time. You have to have the jetties to have Wanchese. The other conflict, I think, is very close to the Coastal Barrier Act, Resource Act and infringement on the spirit of this act of spending millions on a barrier out. We go into some more of the report where the Army said that the Outer Banks was not a barrier out. After 8 years, all of a sudden it has lost its standing.

Dr. Godfrey of Massachusetts points this out in a letter that he thinks it is in direct conflict with the spirit of the Coastal Barrier Resource Act. Then let's take a minute, Mr. Hunter mentioned Ocean City, what is happening there, and I have articles from the Baltimore Times and a map of what has happened over at Assateague.

You only have to get GIT Report 19, titled "Inlet Response to Jetty Constructions in October 1981," and this turned out by the U.S. Army Coastal Engineer and Research Center, and go down the list of what has happened to these jetties. They just haven't worked.

In other words, there has been as much dredging going on after they built them than before. I think Mr. Limon who is a publisher of the Saltwater Sportsman made a very good statement. Here is his statement: "Concerning construction of jetties at Oregon Inlet, I would look with more favor on such project if the U.S. Army Corps of Engineers could show me just one example of success on the east coast of such construction." Mr. Limon has been up and down this coast hundreds of times. "I am very familiar with the jetties built in the past along this coast and in every case, record dredging has been required to keep the channels open even after jetty construction. Why spend millions on a system that never works?"

I think there is a lot of proof that the jetties have not worked.

As far as the future is concerned, some of the proponents of the jetties say you are going to be able to fish off the jetties. That has been checked out. Good jetty fishermen—I don't think many have tried it. Some say you don't need to have these expensive vehicles anymore if you go out on the jetties. I suggest maybe some of these $50,000, $60,000 boats wouldn't be needed if the jetty fishing was so good.

The point is nowhere else on the eastern coast do we have a situation as far as tidal responses of Oregon Inlet. Here is a 4,000-foot jetty; we have pictures to get right on the beach, that is what they have been doing for years and now they are supposed to go out on a 4,300-foot jetty and fish with the waves coming in and the wind, the storm, everything, in no manner can we say we can accept jetty fishing to replace the type of fishing we have now at Oregon Inlet.

To jump briefly, I might say this, that in further study of what has happened, we took impact statements and very briefly, some of the things they said from the planned formations of the U.S. Army Corps of Engineers about Manteo. During operation of sand bypassing, significant portions of both Bodie and Pea Island will be utilized. The impact will not be insignificant as most of the sand bypassing will occur during the peak visitor season. The construction of the jetties, fencing off of visitors perhaps 350 acres and 14 on Bodie Island and 14 on Pea Island during construction. The jetties will have to be designed safe or completely closed.

While this jetty fishing is good stuff to tell you about before they build it, you get out there on some of the wet rocks—I fished off jetties and you can go in pretty quick: Visitation figures for Pea Island for 1976 was 1,600,000, yet, the northern end of the refuge gets most of the public use and this is the area that will probably be most adversely affected by the jetties. They go right down the road and give us a very good case.

Sand bypassing, 2 or 3 months on the north side, also on Pea Island, they say it will take off 300 ORV's or mobile fishermen a year. They can go somewhere else.

You can look at the Cape Hatteras map and it is 100 miles long but you can't go and fish all the places. It is not as easy as they may say. In 1977, there were 468,000 individuals associated with surf fishing. The total visitation on Pea Island and Cape Hatteras was 2,196,000, less 376 went to the visitors, or 1,825,000 in 1976. My goodness, this is 1983 and 1984.

But right down the road, the sand bypassing, they point clearly the loss of this beach. This is our interest. We feel this is a time to look at this from the standpoint of also the people use this. That if we can go in there with hopper dredge and keep it there, and I don't think there is any question, there is a good channel all the way through. You can send a battleship or destroyer through, but there is a good channel there. You have some problems with it. You have problems with jetties. But if you spend $650 million over 50 years and if these jetties don't work, we are in big trouble, and I have never seen anybody move those boulders away yet. We want a safe channel there. We don't deny it. We want to be able to fish there and use these beaches in future generations.

If we can get the right funds to get a hopper in there and stay in there—the sidecaster does nothing but throw money away, get a hopper dredge in there and keep that channel open, I think everybody would be happy. We would be happy; the fishermen would be happy.

Thanks for your time.

Senator **Abdnor**. Thank you. Obviously, this is quite a controversial project that we are going to have to go through carefully the testimony. While I know we could ask a lot of questions, I am running way behind schedule. You are going to have to forgive me and let me say we will be submitting any questions we have to you people in writing. I am sure that works just as well.

With that, the Committee on Environment and Public Works stands adjourned.

[Whereupon, at 1:40 p.m., the committee adjourned.]

[Statements and other material submitted for the record follow:]

# STATEMENT OF THE HONORABLE WALTER B. JONES, CHAIRMAN, COMMITTEE ON MERCHANT MARINE AND FISHERIES, REGARDING S. 1471, TO AUTHORIZE THE SECRETARY OF THE ARMY TO USE CERTAIN LANDS IN CONNECTION WITH THE NAVIGATION PROJECT FOR MANTEO (SHALLOWBAG) BAY, NORTH CAROLINA, BEFORE THE SUBCOMMITTEE ON WATER RESOURCES OF THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

FEBRUARY 6, 1984

MR. CHAIRMAN, I WOULD LIKE TO THANK YOU FOR ALLOWING ME THE OPPORTUNITY TO TESTIFY BEFORE THE SUBCOMMITTEE ON WATER RESOURCES REGARDING S. 1471, WHICH WOULD AUTHORIZE THE SECRETARY OF THE ARMY TO USE CERTAIN LANDS IN CONNECTION WITH THE NAVIGATION PROJECT KNOWN AS MANTEO-SHALLOWBAG BAY IN NORTH CAROLINA.

THE MEASURE BEFORE YOU TODAY, WHICH WAS INTRODUCED BY SENATORS HELMS AND EAST, IS IDENTICAL TO A BILL WHICH I INTRODUCED IN THE HOUSE, H. R. 3288. THE PROVISIONS OF THAT BILL WERE SUBSEQUENTLY ADDED TO H. R. 3082, THE EMERGENCY WETLANDS RESOURCES ACT, BY THE HOUSE COMMITTEE ON MERCHANT MARINE AND FISHERIES, WHICH I CHAIR, AND H. R. 3082 WAS FAVORABLY REPORTED BY A UNANIMOUS VOTE OF MY COMMITTEE ON OCTOBER 25, 1983. IT WAS SEQUENTIALLY REFERRED TO THE HOUSE COMMITTEES ON INTERIOR AND INSULAR AFFAIRS AND ON PUBLIC WORKS AND TRANSPORATION FOR A PERIOD ENDING NOT LATER THAN MARCH 1, 1984. THE HOUSE INTERIOR COMMITTEE HELD HEARINGS ON THIS MEASURE ON JANUARY 27 AND 30 AND THE PUBLIC WORKS COMMITTEE HAS SCHEDULED A HEARING FOR TOMORROW.

I WANT TO JOIN WITH SENATORS HELMS AND EAST, AS WELL AS JIM SUMMERS, SECRETARY OF THE NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT, IN STRONGLY SUPPORTING S. 1471 WHICH IS DESIGNED TO CLEAR UP AN EXISTING LEGAL SITUATION WITH THE MANTEO (SHALLOWBAG) BAY PROJECT, COMMONLY CALLED THE OREGON INLET PROJECT. THIS MEASURE IS DESIGNED TO ALLOW THE ARMY CORPS OF ENGINEERS TO USE THE NECESSARY LAND FROM THE CAPE HATTERAS NATIONAL SEASHORE AND THE PEA ISLAND NATIONAL WILDLIFE REFUGE, WHICH THE CORPS ESTIMATES TO BE APPROXIMATELY 150 ACRES TOTAL, IN ORDER TO COMPLETE THE OREGON INLET PROJECT.

OREGON INLET IS LOCATED ON THE OUTER BANKS OF NORTH CAROLINA IN DARE COUNTY WITH CAPE HATTERAS NATIONAL SEASHORE TO THE IMMEDIATE NORTH AND THE PEA ISLAND NATIONAL WILDLIFE REFUGE TO THE IMMEDIATE SOUTH. ON THE LAST PAGE OF MY PREPARED TESTIMONY IS A MAP OF THE NORTH CAROLINA OUTER BANKS SO EACH OF YOU GENTLEMEN CAN FAMILIARIZE YOURSELF WITH THE AREA. AS THE MAP SHOWS, OREGON INLET OFFERS THE ONLY OUTLET TO THE ATLANTIC OCEAN ACROSS A 120 MILE SPAN OF THE OUTER BANKS STRETCHING FROM THE VIRGINIA BORDER TO THE END OF HATTERAS ISLAND.

THE FIRST ATTEMPT TO STABILIZE THE INLET OCCURRED IN 1950. CONGRESS AUTHORIZED A NAVIGATION CHANNEL THROUGH OREGON INLET WHICH WOULD BE MAINTAINED BY DREDGING A DEPTH OF 14 FEET WITH A BOTTOM WIDTH OF 400 FEET. HOWEVER, THE AUTHORIZED 400 FOOT BOTTOM WIDTH HAS NEVER BEEN ATTAINED OVER THE ENTIRE CHANNEL.

SINCE I CAME TO CONGRESS IN 1966, I HAVE WORKED ARDUOUSLY TO GET THE OREGON INLET PROJECT COMPLETED. THE PROJECT WAS AUTHORIZED IN THE RIVERS AND HARBORS ACT OF 1970 WITH AN ESTIMATED COST OF $16.5 MILLION DOLLARS. AFTER 14 YEARS OF DELAYS, THE PROJECT, WHICH HAS BEEN MODIFIED BY THE ARMY CORPS OF ENGINEERS, IS NOW ESTIMATED TO COST $94.5 MILLION. THIS PRICE TAG IS HIGH, BUT IT MUST BE MEASURED AGAINST THE VALUE OF HUMAN LIFE.

THE UNITED STATES COAST GUARD TESTIFIED BEFORE MY COMMITTEE REGARDING THE GRAVE SITUATION IT IS FACING. THE COAST GUARD STATED THAT THE STATION AT OREGON INLET HANDLES 300 CASES PER YEAR, OF WHICH APPROXIMATELY 60 ARE IN THE INLET ITSELF. BECAUSE OF THE SHALLOW CHANNEL FROM THE COAST GUARD STATION TO THE INLET, IN LATE 1982, THE COAST GUARD FOUND IT NECESSARY TO MOVE ITS OWN 82 FOOT BOAT FROM ITS OREGON INLET STATION DOWN TO OCRACOKE INLET, SOME 60 MILES AWAY, AND SUBSEQUENTLY TO WANCHESE HARBOR, WHERE IT IS CURRENTLY DOCKED. AS OF JANUARY 16TH OF THIS YEAR, THE 44 FOOT MOTOR LIFEBOAT AND THE 41 FOOT UTILITY BOAT AT THIS COAST GUARD STATION HAVE BEEN MOVED TO THE OREGON INLET MARINA BECAUSE THE CHANNEL TO THE COAST GUARD STATION HAS SHOALED, AGAIN. THESE BOATS NOW ARE DELAYED SOME 30 MINUTES TO AN HOUR BY THEIR VERY LOCATIONS WHEN ANSWERING SEARCH AND RESCUE CALLS IN THE ATLANTIC OCEAN. THE CLOSEST COAST GUARD STATION TO THE NORTH IS LITTLE CREEK, VIRGINIA, WHICH IS ABOUT 120 MILES AWAY. THE CLOSEST STATION TO THE SOUTH IS LOCATED AT HATTERAS INLET, WHICH

IS 52 MILES AWAY. BY ALLOWING THIS TREACHEROUS SITUATION TO CONTINUE, WE ARE JEOPARDIZING MANY LIVES THAT WOULD NOT OTHERWISE BE IN PERIL AND FORCING THE COAST GUARD TO OPERATE WITH A BIG HANDICAP IN THEIR SEARCH AND RESCUE OPERATIONS.

SEVERAL OPPONENTS OF S. 1471 HAVE STATED THAT DREDGING THE CHANNEL IS A PRACTICAL ALTERNATIVE. THE ARMY CORPS OF ENGINEERS HAS SUPPLIED ME WITH SOME GENERAL FIGURES. A HOPPER DREDGE WAS UNDER CONTRACT BY THE CORPS OF ENGINEERS FROM SEPTEMBER 2 UNTIL DECEMBER 31, 1983. THE CONTRACT WAS OVER ON DECEMBER 1, 1983; HOWEVER, THE WORK WAS NOT COMPLETED. THIS HOPPER DREDGE OPERATED APPROXIMATELY 48 PERCENT OF THE TIME WITH A DOWN TIME OF 52 PERCENT DUE TO BAD WEATHER CONDITIONS AND REPAIRS. IN NOVEMBER, 1983, A SIDECASTER DREDGE WAS TRANSFERRED TO OREGON INLET BY THE CORPS TO DREDGE THE COAST GUARD CHANNEL AND OTHER PLACES WHERE THE HOPPER DREDGE COULD NOT GO. WHEN THE CONTRACT EXPIRED, I ASKED THE ARMY CORPS OF ENGINEERS TO EXTEND THE CONTRACT THROUGH THE END OF THE YEAR IN ORDER TO GET THAT CHANNEL NAVIGABLE IN TIME FOR THE COMMERCIAL FISHING SEASON -- WHICH I AM HAPPY TO ADD, THE CORPS COULD AND DID DO. WHEN THE HOPPER DREDGE LEFT OREGON INLET, THE INLET WAS IN EXTREMELY GOOD CONDITION. IT WAS ESTIMATED AT THAT TIME THAT THE AVERAGE BOTTOM WIDTH OF THE CHANNEL WAS 350 FEET WITH THE WIDEST POINT BEING 400 FEET AND THE NARROWEST POINT SOMEWHERE AROUND 270 FEET. I AM TOLD THAT, AS OF TUESDAY, JANUARY 28, THE AVERAGE WIDTH WAS SOMEWHERE IN THE NEIGHBORHOOD OF 290 FEET. IN LESS THAN ONE MONTH'S TIME, SHOALING HAS DISPLACED APPROXIMATELY 60 FEET OF BOTTOM WIDTH. OBVIOUSLY, DREDGING IS NEITHER A PRACTICAL NOR AN ACCEPTABLE ALTERNATIVE.

PRIME COMMERCIAL FISHING OCCURS IN THIS AREA IN THE WINTER MONTHS; HOWEVER, THIS IS THE SAME TIME WHEN THE MOST SEVERE STORMS HIT THE OUTER BANKS, PLACING THESE FISHERMEN IN GREAT PERIL. IF VESSELS ARE UNABLE TO PASS THROUGH THE INLET TO UNLOAD THEIR CATCH OR TAKE ON ADDITIONAL SUPPLIES, THE AREA WILL LOSE A MAJOR SOURCE OF JOBS AND INCOME.

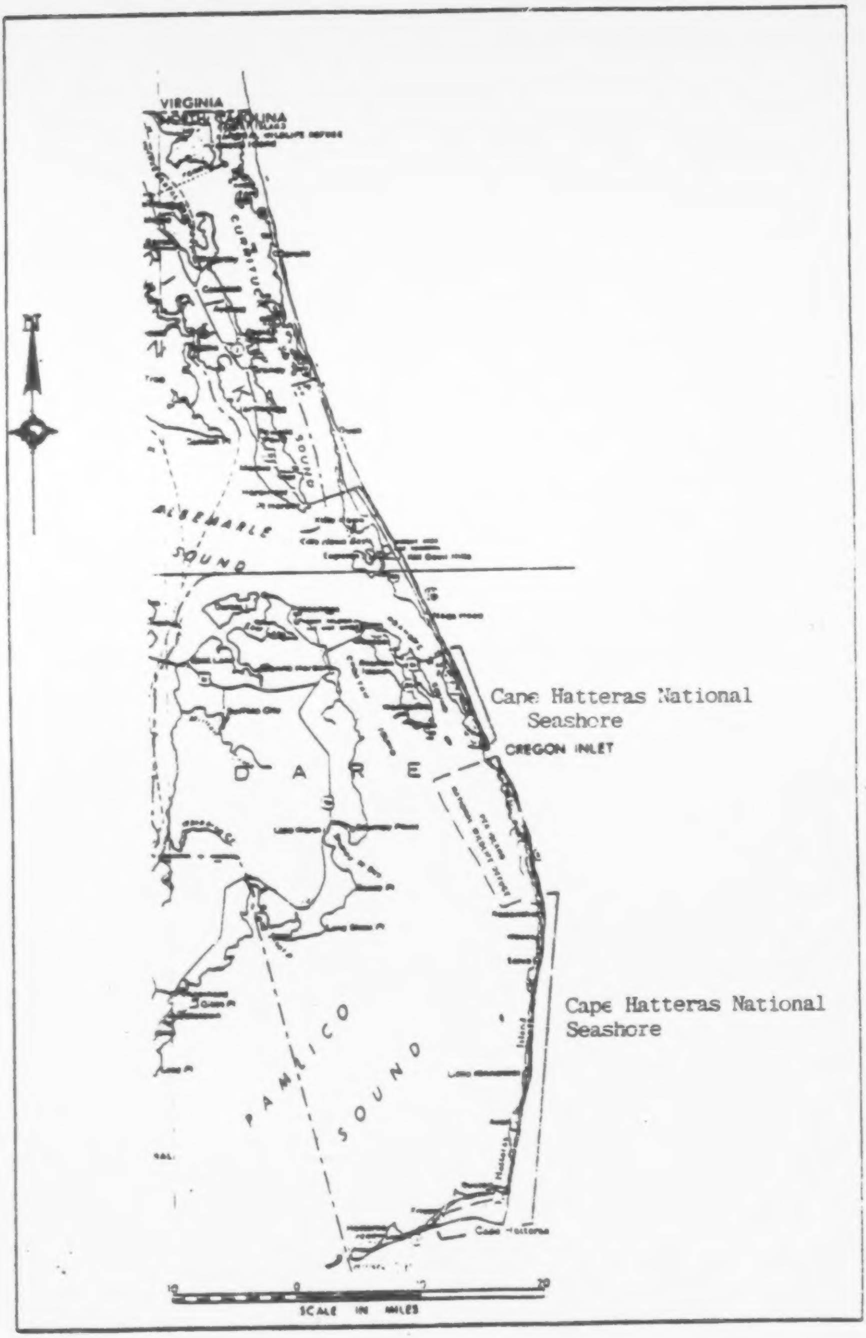
AT WANCHESE, WHICH YOU CAN SEE FROM THE MAP IS ABOUT SIX MILES FROM OREGON INLET, THE STATE OF NORTH CAROLINA, IN COOPERATION WITH THE FEDERAL AGENCIES, HAS DEVELOPED A MODERN COMMERCIAL SEAFOOD INDUSTRIAL COMPLEX TO ACCOMMODATE LARGE SCALE SEAFOOD HANDLING AND PROCESSING OPERATIONS. BECAUSE OF THE UNCERTAIN CONDITIONS AT OREGON INLET, THIS SEAFOOD PARK WILL GO OUT OF BUSINESS. AN ACCOUNT OF THE DIFFICULTIES THIS STATE FACILITY HAS FACED WILL BE PRESENTED BY SECRETARY JIM SUMMERS IN HIS TESTIMONY.

MY POINT IS THIS: THE LACK OF A SAFE, NAVIGABLE CHANNEL 12 MONTHS OUT OF THE YEAR THREATENS THE SURVIVAL OF THE COMMERCIAL FISHING INDUSTRY IN THIS AREA. IF THE FISHERMEN TRY TO TRAVERSE THE INLET AND GET INTO TROUBLE, THE COAST GUARD'S SEARCH AND RESCUE EFFORTS, WHERE A FEW MINUTES CAN MEAN THE DIFFERENCE

BETWEEN LIFE AND DEATH, ARE SEVERELY HAMPERED BY DELAYS DUE TO SHOALING. THIS SITUATION CANNOT CONTINUE TO EXIST.

I STRONGLY SUPPORT S. 1471 AND I URGE THIS COMMITTEE TO REPORT THIS BILL FAVORABLY WITHOUT DELAY.

THANK YOU AGAIN FOR THIS OPPORTUNITY TO TESTIFY.


VIRGINIA
NORTH CAROLINA
CURRITUCK SOUND
ALBEMARLE SOUND
Cape Hatteras National Seashore
OREGON INLET
D A R E
PAMLICO SOUND
Cape Hatteras National Seashore
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SCALE IN MILES

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
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IN REPLY REFER TO February 24, 1984

Coastal Engineering Branch

[redacted]
Honorable James Abdnor
United States Senate
Washington, D. C. 20510

Dear Senators Chaffee and Abdnor:

This is in reply to your letter of February 8, 1984, and accompanying questions including those of Senator Robert T. Stafford concerning the Manteo (Shallowbag) Bay project as it relates to S.1471.

Three copies of the answers to each of your questions and those of Senator Stafford are enclosed.

The opportunity to provide answers to your questions is appreciated, and if I can be of further assistance, please let me know.

Sincerely,

Limberios Vallianos
Chief, Coastal Engineering Branch

Enclosures

ANSWERS TO QUESTIONS ON S.1471 SUBMITTED BY U.S. SENATOR ROBERT T. STAFFORD

QUESTION 1. As I understand the Corps project, its success depends upon dredging and the "bypassing" of that sand to areas where erosion has occurred.

(a) In seas of what height can this "bypass" dredge operate safely?

(b) What is the variation in the height of the seas off Oregon Inlet during the summer? In the winter?

(c) Has the breakwater to protect the dredge been designed?

(d) How long will it take to remove the breakwater in the event of a sudden storm, and move the dredge to safety?

(e) To what degree can the location of winter storm erosion be forecast during the preceding summer when dredging is to occur?

(f) What is the cost of this maintenance program, compared with the existing maintenance program for the inlet?

ANSWER 1(a). Dredging operations, in the shadow of the bypassing system's breakwater, would be performed until the incoming waves reach heights exceeding 6 feet. This would allow dredge plant production for about 90 percent of the total time that the dredge is moored in the zone behind the sheltering breakwater.

ANSWER 1(b). Seas may be described in terms of wave height and period where the wave height is the vertical distance between crest and trough, and period, usually expressed in seconds, is the time required for two consecutive crests to pass a stationary point. Since seas are comprised of a spectrum of large to small waves with varying periods, a generalization of a spectrum is usually given in terms of the "significant" wave height and related period. By definition, the "significant" wave height and period are the average height and period of the one-third highest waves in a given wave group. At the Oregon Inlet site, nearshore ocean waves approaching the inlet and adjoining shore have an average "significant" height and period of 2.1 feet and 8.4 seconds during the summer months of June, July, and August; and 3.4 feet and 8.8 seconds in the winter months of January, February, and March. The demonstrative difference in the two seasonal wave climates is readily apparent on comparing the related wave energies which are a direct function of the product of the wave period and the square of the wave height. Specifically, the average summer wave energy level reaching the site is only 37 percent of the winter wave energy level.

ANSWER 1(c). Development and design of a transportable breakwater has been a cooperative effort between the Corps of Engineers and the U.S. Navy, and has also involved specialized Architect-Engineer services in marine structures design. There are presently 30 detailed scientific/engineering documents pertaining to the testing, development, and design of the basic breakwater module that would be employed in sand bypassing at Oregon Inlet if the inlet is stabilized by jetties. The technology utilized in the design of the floating breakwaters and moorings is widely applied in the design of ship hulls, moorings, and marine structures which operate daily in ocean environments far more hostile than the Oregon Inlet site. Basic structural design of the breakwater module and moorings has been completed and consists of a post-tensioned concrete structure having a width of 130 feet, length of 90 feet, and overall depth of 5.5 feet. It is currently estimated that a total of six modules will comprise the overall breakwater assemblage of the sand bypassing system. This provides a protected shadow zone front of 780 feet. Each module is a barge-like structure which, in its operational mode, is partially submerged with the shoreward or protected end ballasted so as to be near to or resting on the sea floor while the other end of the structure protrudes above the water surface and faces in the direction of incoming waves. Current investigations being conducted in connection with the breakwater system pertain to optimizing field operations and attaining economies of scale during dredging operations. Specifically, a study is now underway to determine if there is any relative advantage in coupling two modules together rather than mooring each module singularly. Another ongoing study is directed at establishing the optimal arrangement of the modules in the field so as to attain the greatest possible level of wave attenuation and hence the highest production output from the protected dredge plant. These final studies are scheduled for completion in October 1984. This will be followed with the preparation of a Feature Design Memorandum - a single document that will be a composite synthesis of the entire development/design program for the sand bypassing system. This document is scheduled for completion in April 1985.

ANSWER 1(d). Sudden storms or extratropical depressions referred to as "northeasters" frequent the "Outer Banks" project site. Accordingly, the breakwater modules and related moorings have been designed to withstand such storms without necessity for removal of the system to a harbor of refuge. Specifically, the design of the modules, moored in place, is based on wave heights of 18.0 feet and wave periods of 10 seconds and with an applied safety factor of 2.6. Nearshore ocean wave characteristics have been measured near the Oregon Inlet project site since 1964 on a daily basis, except for short intervals associated with gage malfunctions. In the total 19-year period, the largest wave recorded has a height of 15.5 feet and a period of 10 seconds. Though the general wave climate at Oregon Inlet site is severest during the winter season, the largest recorded wave, as referred to above, was measured during a storm which occurred in June 1966. Based on the long period of site wave data and the adopted design levels, the combined structural and attitudinal integrity of the breakwater assemblage will withstand any of the normal wave conditions expected at the site including the common storm events. Therefore, in the course of sand bypassing operations, the breakwater units will be removed and secured in a harbor of refuge only in the event of an approaching storm of hurricane intensity. In such a case, the entire system can be removed and secured in safety within a 4- to 5-day period. Since hurricanes are routinely located and tracked for periods extending over one week, there are no foreseeable problems in securing the system in advance of hurricane arrival. Moreover, the planned timing of sand bypasing operations is such as to render extremely remote any possibility of having to secure the bypassing system against hurricane exposure. In this regard, total deployment of the sand bypassing system will be 1 to 2 months depending on sea conditions during specific operations. These operations will be generally performed in May and June, or June and July. Records of hurricanes affecting various U.S. Coastal areas, on a county basis, are maintained by the National Hurricane Center, National Weather Service, Miami, Florida. The record for the project site, Dare County, N. C., extends to the present from the year 1900. In that 83-year period of hurricane seasons, only 10 such storms have directly affected the area, and another 9 storms have only indirectly affected the area. Of the total of 19 storms, the occurrences by month were: 4 in July; 6 in August; 7 in September; and 2 in October.

ANSWER 1(e). The severity of winter storms and their impacts on beaches adjacent to Oregon Inlet have been thoroughly investigated on the basis of actual shoreline behavior since 1937, as documented by surveys and aerial photographs. The behavioral patterns, in combination with the well established wave climatology for the site, were utilized to quantify average annual sand transport and requirements for project sand bypassing. These investigations demonstrate that bypassing operations will, on an average annual basis, be required once per year.

However, the overall commitment to this particular project feature dictates that if sand bypassing over any given period is found to be required at intervals more frequent than once a year, then the program will be modified accordingly. Similarly, should operating experience in a certain period demonstrate that bypassing could be effective if accomplished at intervals greater than 1 year, advantage would be taken of such a condition to minimize costs and disruption of beach use in the excavation and sand placement zones. In practice, the sand bypassing requirements each year will be determined by a monitoring program of surveys and aerial photographs to define overall beach behavior within and up and downcoast of the sand accretion and sand placement zones. These data will be evaluated by means of a predictive numerical model that will evaluate low to high wave energy attack over future months and establish the range of sand bypassing quantities, accretion and placement locations, and frequency of operations over the forthcoming year. However, the basic sand bypassing program will be to repeatedly provide large stockpiles of coarse material, at natural beach elevations, along the shore segments which would otherwise experience a sand deficit induced by jetty structures. The function of the stockpiles is twofold, namely: (a) to provide a source of material for transport by wave action to the adjacent beaches, and (b) to create a buffer beach in the zone of deposition which would prevent erosion from propagating into the existing or natural beach area during periods of intense wave action and attendant sediment transport. This is the general and accepted practice when sandfills are used to protect beaches. Since new stockpiles would be provided each year, erosion would be limited to the bypassed material. Accordingly, the creation of a stockpile at the point of deposition is of utmost importance and, to accomplish this, material should, if possible, be placed along the desired area during periods of low wave energy when alongshore and offshore sediment movements are minimal. This allows for the accumulation and development of the stockpile or sand reserves for their intended service during subsequent high wave energy episodes associated with storms. Conversely, placement of fill during extreme or high wave energy events would result in immediate offshore dispersal of a considerable amount of the bypassed material by storm-induced nearshore circulations further enhanced by dredge-water discharge. Additionally, the rate of sediment placement by floating dredge plant along even a small section of the entire reach of shore intended to receive nourishment would be totally inadequate during the typically less than 48-hour durations associated with most of the winter storms that frequent the Outer Banks. This is to say nothing of the difficulty of handling dredge pipe on a beach under conditions of storm wave runup, high winds, rain, etc. In short, the idea, often advanced by project opponents, that a bypassing system for the provision of beach nourishment must be capable of operating during storm events in order to be effective is not supportable either by basic considerations or by the experience and practice in beach nourishment operations. The second advantage of conducting the bypassing procedure during relatively low wave energy periods is that economies of scale are effected. Simply stated, the smaller the wave activity, the greater the dredge production, less downtime occurs, beach operations are facilitated, and the job is completed in the shortest time period.

ANSWER 1(f). The Manteo (Shallowbag) Bay project, in providing stabilization of Oregon Inlet by means of jetty structures and, by so doing, assuring the presence of an all-weather inlet channel having a low water depth of 20 feet and bottom width of 400 feet (as authorized in 1970), is the only feasible navigation improvement plan that can bring to fruition the long term growth potential of the fisheries industry in northeastern North Carolina. This project, including 9 miles of expanded estuarial channels and harbor basin at the Village of Wanchese, N. C., has a total construction cost currently estimated at $99,086,000, to be expended over a 4-year budget period. The total project annual operations and maintenance costs are estimated at $4,212,000 of which $3,668,000 are related to the sand bypassing feature. On the other hand, dredging operations conducted by the Corps of Engineers at Oregon Inlet since 1962 have been directed at attempting to maintain a channel, authorized in 1950, which would have a prescribed low water depth of 14 feet and bottom width of 400 feet. These prescribed dimensions have never been attained. Specifically, maintenance dredging has never been capable of developing a channel width of 400 feet. In regard to channel depths, reference is made to attached figure 1 which displays the average depths of the channel between 1962 and the end of calendar year 1983. It will be noted that there are time periods in the record when average channel depths equaled and generally exceeded 14 feet at low water. Indeed, such favorable depths prevailed for the entire commercial fishing seasons in the winters of 1964/1965 and 1978/1979. However, the overall record from 1962 to 1983 demonstrates that, in general, water depths in the channel have been far less than 14 feet. Quantitatively, in the periods during which maintenance dredging was performed by hopper dredges (HYDE and MERMENTAU), depths at or greater than 14 feet existed only some 28 percent of the time. Similarly, the sidecast dredging operations were capable of providing channel depths at or greater than 14 feet only 16 percent of the time. The channel presently under maintenance has a minimum width of 270 feet and water depths varying between 12 and 25 feet. Unusually favorable weather and sea conditions have prevailed over the early winter of 1983/1984. Exposure of the channel, its behavior, and resultant dimensions through the remaining 1983/84 winter season remain to be seen. Hopefully, this winter season channel condition will be a repetition of the conditions enjoyed in the anomalous winter seasons of 1964/65 and 1978/79. In any case, the long record and experience in attempting to maintain navigable depths and channel widths approaching the prescribed 1950 authorization of a 14-foot low water depth and bottom width of 400 feet clearly demonstrates the difficulties and attendant difficiencies associated with such operations. Additionally, it is important to understand that the average fishing trawler now using Oregon Inlet is considerably larger than the types of vessels using the inlet in the 1940's and 1950's when channel depths were prescribed at 14 feet. Specifically, the older vessels had drafts in the range of 6 to 9 feet, whereas the present day commercial fishing craft, on the average, draw 11 feet of depth in still water. When making passage through the intensified wave environment of Oregon Inlet, the uncontrollable heaving and pitching motions of the present-day vessels using the inlet require a channel having a minimum depth of 20 feet at low water and bottom width of 400 feet for safe operations. Given the conditions of a rapidly shoaling channel, narrow widths that generally vary from 200 to 250 feet, and the existing vessel sizes, fishermen must observe limiting constraints in traversing the Oregon Inlet channel. That is, passages are limited to low to moderate seas, high tides which offer approximately 3 additional feet of water depth, and daylight hours when the buoys marking the narrow channel are clearly visible. Therefore, maintenance dredging operations which have and will continue to be conducted at Oregon Inlet can only be viewed as efforts directed at survival of the existing fishing industry of the region and certainly not at its growth nor, necessarily, its long term viability. Thus, the costs of maintenance dredging bear no comparative relationship in terms of safety and economics to the costs of the authorized Manteo (Shallowbag) Bay project and its related sand bypassing. With these points in mind, reference is made to table 1 which provides a tabulation of the costs of maintenance dredging expended at Oregon Inlet since the initial dredging in 1960-1961. The maintenance dredging expenditures from Fiscal Year 1962 through 1983 total $20,543,000. During the first quarter of FY 84, about $2,000,000 were expended for dredging, and it is projected that an additional $2,561,000 of expenditures will be required over the remaining three quarters of this fiscal year.

QUESTION 2. A hopper dredge has been used on the inlet in the last year or so. How effective has it been in keeping the channel open? Why can't it do the job in the future?

ANSWER 2. Partial response to Question 2 is given in Answer 1(f) above. Further information is as follows. A hopper dredge was used last year at

Oregon Inlet but was by no means the first time that that particular type of dredge plant was used at the site. Specifically, initial channel excavations were accomplished in 1960 and 1961 with employment of the Corps hopper dredge HYDE. Maintenance dredging in the Oregon Inlet channel began in 1962 and was performed exclusively by the HYDE through 1964. In 1965 and extending to 1972, combined employment of the HYDE and the Corps sidecast dredge MERRITT was implemented. Use of the MERRITT was necessitated by the fact that channel depths, normally in the range of 8 to 11 feet at low water, were not adequate to allow for safety and/or operational requirements of the HYDE. During those combined dredge deployments, the MERRITT's task was to excavate a pilot channel of adequate size to allow the HYDE to execute the maintenance mission in safety. In this connection, the sidecast dredge MERRITT has a consistent draft of about 5 feet, whereas the hopper dredge HYDE would draw 9 feet unloaded and 13 feet when fully loaded with dredged material. Notwithstanding use of the MERRITT in pilot channel development, unsafe conditions frequently confronted the HYDE and necessitated partial load operations due to shallow channel depths. During dredging in 1968, heavy seas in Oregon Inlet drove the HYDE aground where it remained for 2 weeks and was nearly lost. From 1973 through 1982, all maintenance of the Oregon Inlet ocean entrance channel was accomplished by sidecast dredges, primarily the Corps dredge SCHWEIZER having a draft of 9 feet. Intermittent assistance was provided by the MERRITT and the FRY, both having drafts of about 5 feet. The dredging courses in Oregon Inlet have always followed the deepest natural water depths across the ocean shoal. In the period 1973-1982, the line of natural water followed by the dredging vessels was juxtaposed to the north shoulder of the inlet with heavy shoaling concentrated at its seaward end. Particularly, severe shoaling conditions in Oregon Inlet were manifested in the period 1980-83. In the winter of 1981-82, shoaling rates attendant with adverse weather conditions exceeded the capabilities of the combined efforts of the SCHWEIZER and MERRITT to prevent closure of the ocean entrance channel at Oregon Inlet. This had severe impacts on the commercial fishing industry of the northern Outer Banks because its primary production season extends from October to March. Since channel depths were only 8 to 9 feet at low water during the winter of 81-82, use of large, high production hopper dredges was not possible due to their deep draft characteristics (full draft depths of 14 feet). Use of the SCHWEIZER and MERRITT to develop a pilot channel for such dredges was not possible due to the combination of high shoaling rates and rough seas. With the abatement of weather conditions in the spring and summer of 1982, the SCHWEIZER, MERRITT, and FRY were able to reestablish channel low water depths at or below the 14-foot project depth over a bottom width of about 200 to 250 feet, but a single storm in December 1982 quickly filled the channel to a depth of 10 feet. Meanwhile, it became apparent in 1982 that another zone of relatively deep water was developing along an alignment centrally located across the ocean shoal. Since the dredging effort in the 1980-82 period had been ineffective in creating adequate navigable depths for any reasonable time, it was decided to concentrate the 1983 dredging operation along the centrally located deep water area and to increase the dredging production by the addition of a contract hopper dredge to the Corps sidecast dredges operating at the site. This plan was implemented with the employment of the contract hopper dredge MERMENTAU and the Corps sidecast dredges FRY, MERRITT, and SCHWEIZER. The MERMENTAU in combination with the sidecast dredges began operations to develop navigable depths through Oregon Inlet on 2 September 1983. The operation was planned to develop a channel width of 400 feet at a low water depth of 14 feet, with allowable overdepth dredging of an additional 3 feet of depth. Overdepth allowances are necessary to account for the variability of excavation levels inherent to dredging operations. Also, the removed overdepth volume provides storage, below desired depth, for shoal material accumulating subsequent to completion of dredging. On the initiation of hopper dredging, beginning 2 September 1983 and extending to 19 September 1983, results appeared very promising. In this regard, reference is made to figure 2. The vertical scale of this display gives cumulative volume of material excavated by the hopper dredge MERMENTAU. The upper horizontal scale gives time periods between 2 September and 29 December 1983. The lower horizontal scale shows, for the respective time periods above, the measured incoming ocean wave energy toward the inlet as a percentage value of average incoming wave energy expected September through December as based on long term wave measurements recorded for the general project site. As stated above, dredging production was promising up to 19 September. However, from that date to 17 November, the situation was very disappointing as little or no production was attained. In fact, the net production between 19 September to 17 November amounted to only about 11,000 cubic yards, that is, a cumulative increase from 220,000 cubic yards on 19 September to about 231,000 cubic yards on 17 November. During this unproductive period, fishermen were extremely apprehensive over the poor results and condemned the effort as a failure. However, in the immediately following periods, 17 November - 29 November, and 1 December - 10 December, the situation completely reversed itself to being highly successful with the removal, over that total period, of about 163,000 cubic yards of sediment. By the end of December and completion of the MERMENTAU contract, a total of approximately 417,000 cubic yards of material had been removed from the navigation channel by the MERMENTAU assisted by the sidecast dredge MERRITT. At the end of December 1983, the navigation channel had a minimum width of approximately 270 feet and water depth varying from 14 to 26 feet at low water. There are two important points to be made with respect to those results. First, the success of the fall and early winter dredging in 1983 was attained in the three time periods during which incoming ocean wave energy was unusually low for that general period of the year. In reference to figure 2, these periods are designated as Time Periods A, B, and C. It will be noted that, with respect to the expected wave energy, actual incoming wave energy levels were only 55, 15, and 29 percent for Time Periods A, B, and C, respectively. On the basis of wave energy levels, dredge production should also have been high in the period 1 November to 17 November in which the energy level was down to 56 percent of the expected value. However, during most of this period, the dredge MERMENTAU was in a shipyard having repairs made to propeller and engine due to damages sustained in attempting to dredge during the previous high energy period. In any case, it is quite apparent from the record that the overall dredging effort would have been far less successful had incoming wave energy been at its expected average level during the entire dredging period. The second point of importance pertains to the final range of channel depths existing on completion of the MERMENTAU contract, that is, depths in the range of 14 to 26 feet. As stated previously the overdepth dredging allowance was specified at 17 feet below low water. However, in the course of dredging operations it became evident that the channel could not be expanded from a self limiting width of about 200 feet with dredging depths of 17 feet. This constraint existed because the steep side banks of the channel, against which it was dangerous to operate, would not "cave" or fall to the deeper channel where safe removal would be possible. Accordingly, the MERMENTAU began dredging to depths between 17 and 26 feet in an attempt to destabilize the toes of the side banks and "cave" the material to the adjacent deeper areas where safe removal could be effected. This procedure was only partially successful, and the channel width could not be significantly expanded until the shallow draft sidecast dredge MERRITT began operating over the resistant channel side banks, casting the dredged material into the deeper channel from which it was removed by the MERMENTAU. It is remarked that considerable overdepth dredging has been previously conducted at Oregon Inlet. This is generally evident from the channel depth history displayed on figure 1. Moreover, the depths as shown on figure 1 represent average after-dredging depths and not range of depths. Condition surveys of past dredging episodes involving the hopper dredge HYDE or the various sidecasters show dredging depths varying from 14 to 20 feet at low water. As stated above, the minimum channel width and depth range at the end of December 1983 were 270 feet and 14 to 26 feet, respectively. Dredging operations are continuing with the employment of the sidecasters. The latest condition survey conducted 19 February 1984 shows a minimum channel width of about 270 feet with depths ranging from 12 to 25 feet. The fate of the channel over the remaining winter period of 1983 will depend on the sea conditions that will occur over that particular period. With respect to future maintenance dredging operations and their effectiveness, the enviornmental factors that have prevailed over the past 22 years and that have limited the efficiency of dredging operations in that period will unquestionably continue unchanged over time. The two controlling environmental factors are the severe wave climate at the site and the natural level of the inlet's seaward shoal through which the ocean entrance channel is dredged and maintained. The severe wave climate drives approximately 2 million cubic yards of sediment toward the inlet from the adjacent beaches each year. Peak sediment inflow to the inlet and concomitant rapid shoaling within the ocean entrance channel occur during stormy conditions. At the same time, these conditions preclude or significantly limit dredging operations. Under such conditions, the inlet channel can be navigable on one day and on the next day or week be impassable. The time required to reopen the channel to navigation is dependent on the quantity of shoaling that has occurred, the dredge production capacity, and the ability to perform dredging as dictated by the subsequent state of the seas and water depths in the shoaled area. These variables are influenced to a large degree by the second important environmental factor, the natural depth of water over the inlet's seaward shoal. This depth is about 8 to 9 feet at low water, and natural forces are constantly at work to reestablish that level in the excavated channel. When the natural level is reached through rapid shoaling processes, the type and size of dredging plant that can be immediately employed in reopening operations are limited to those having shallow draft characteristics, specifically, dredges such as the SCHWEIZER and MERRITT. Although deeper draft, higher production dredges, such as the MERMENTAU, can be employed, such dredges require backup by the shallow draft sidecasters for pilot channel development and assistance in dredging shallow channel side slopes. Moreover, the presence of higher production dredges at the site would not assure continued maintenance of project channel dimensions or rapid reopening of the channel following an intense shoaling episode. For example, the conditions existing over several months during the winter of 1981-82 prevented the SCHWEIZER and MERRITT from developing sufficient water depths to allow employment of a deeper draft, higher production dredging plant.

QUESTION 3. This area, I gather, is relatively limited in the amount of sand available. Whatever protection to the coast is needed must come from the sand that is now there. To what degree will sand accumulate at the mouth of the jetty, and thus not be available for replenishing the beaches?

and

QUESTION 4. Will there be shoaling in the inlet after the completion of the jetties? To what degree?

ANSWERS 3 & 4. By means of the planned sand bypassing procedure, it is not anticipated that any significant quantity of littoral sediment would be deposited offshore of or within the ocean entrance channel under the jetty stabilization plan. That is, with each excavation and transference of material in accomplishing sand bypassing, a deep sediment trap would be created in the sea bottom within the zone of excavation. This sediment trap would accumulate subsequent littoral material influx which in turn would be transferred downcoast in the next bypassing operation. With respect to the limited amount of sand present in the littoral system, it is important to recognize that the shores adjacent to and influenced by Oregon Inlet are experiencing erosion amounting to a long term land loss averaging 8.5 acres per year. This land loss occurs as a result of littoral sediment entrapment within the Oregon Inlet shoal environment. An additional net loss of land amounting to about 13 acres per year has been experienced over the past 9 years due to inlet expansion and migration. The extent to which this latter land loss cause would be experienced in the future is indeterminent due to the erratic and unstable behavior of the inlet in its natural state. However, all the land losses referred to above would be prevented under the jetty stabilization and related sand bypassing plan.

QUESTION 5. Let's assume a hurricane were to strike the area. Let's also assume the jetties are built. What is likely to occur with the water buildup in the Sound? Will that water breach the barrier reef at another location? If it did, what would happen?

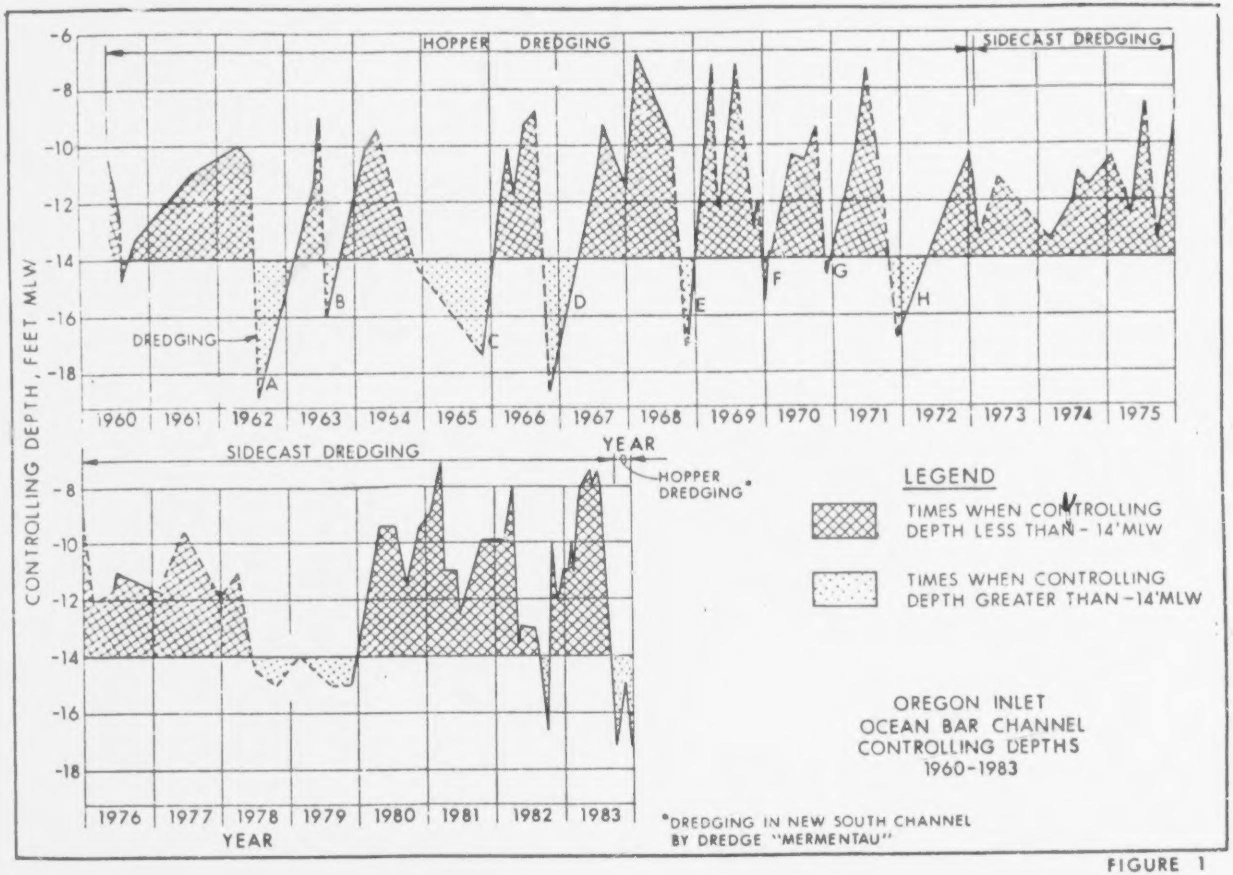
ANSWER 5. The natural history of the Outer Banks of North Carolina is punctuated by recurrent openings of inlets through its narrow and relatively low barrier islands. Some of the inlets have closed in short periods of time, while others have persisted for long durations. These episodic events in the course of future history will occur with or without jetties at Oregon Inlet or any other inlet within that region. In the project studies and designs, the Corps' responsibility was to assure that the plan for stabilization of Oregon Inlet would not enhance the probability of new inlet creation or the increase of existing flood potentials along the developed periphery of Pamlico Sound. Accordingly, comprehensive and complex mathematical, as well as hydraulic model studies, were conducted to ensure that the jetty alignments and spacings would not impede the flow of storm-generated waters through Oregon Inlet. The model studies were calibrated and verified by data from actual major storm events which caused the maximum tides of record along both the ocean and estuarial shores of the region. The hydraulic model simulated storm tides within an area of approximately 25 square miles in which the inlet was centered, whereas, the mathematical model encompassed the offshore Continental Shelf and entire estuarial region of northeastern North Carolina including Pamlico and Albemarle Sounds. Within the areal extent covered by the hydraulic model, the hydraulic model and mathematical model tests both demonstrated that under the most constricted jetty spacing of 2,500 feet, increases in storm tide levels would be confined to the proximate location of the inlet and that such tide level increase would be small and acceptable in magnitude. Specifically, the increase in tide was 0.6 to 0.7 foot at a distance of 3,500 feet from the center of the inlet and only 0.2 foot at a distance of 8,000 feet from the inlet's centerline. Moreover, these small tide increases were based on conditions wherein the extensive shoals now existing in the inlet did not change. When the estimated scour of these shoals was introduced in the hydraulic model, the maximum increase in tide was reduced to 0.2 foot along the land periphery proximate to the inlet. In any case, with or without the scour of inlet shoals, the small increases in storm tide near the inlet, under the narrowest possible jetty spacing, pose no dangers in terms of flooding or inlet breakthroughs. Furthermore, the mathematical model studies which covered a much greater geography than the hydraulic model investigations revealed that in the developed areas of Nags Head situated 9 miles north of Oregon Inlet, the jetty plans would have absolutely no effect on storm tides.

QUESTION 6. How long has the fish processing plant been operating? Who built it? To what degree was it built with Federal support?

ANSWER 6. It is assumed that Question 6 pertains to fish processing plant(s) in the Wanchese Seafood Industrial Park and not to processing plants which have existed for decades at the Village of Wanchese, N. C. In that regard, there are no fish processing plant(s) in the Wanchese Seafood Industrial Park which, at present, is only a basic infrastructure for a future fisheries industry complex. The history of the industrial park concept has its roots in the 1960's when the Federal Government demonstrably recognized the necessity for improving our overall national commercial fishing capability vis-a-vis the intensive harvesting of fisheries resources over the U.S. Continental Shelf by well equipped foreign fishing fleets, of which some of the most active represented Communist bloc nations totally supported by their respective governments. This recognition resulted in Federal programs implemented in the 1970's that were aimed at establishing the United States' fisheries industry in a position of world prominence and at a competitive level with existing modern foreign fleets. Briefly, there were three important national programs set in motion, namely: (a) our Government's involvement in international agreements to limit the exploitation of the fisheries resources of various national continental shelves by fleets of foreign nations - this international program was implemented in 1977; (b) the Capital Construction Fund program was instituted and allowed fishermen to place tax-free earnings in funds specifically earmarked for the purchase of vessels and equipment; and (c) the Fishing Vessel Obligation Guarantee program whereby the Federal Government underwrote loans to fishermen for the purchase of new trawlers. In the case of the State of North Carolina and its fishing industry, further inducement to modernize existed by virtue of the Manteo (Shallowbag) Bay project which was authorized in 1970 and promised to stabilize the dynamic and treacherous Oregon Inlet. Apart from the impact of the aforementioned Federal programs and project authorization on the purchases of new and larger fishing vessels, the State of North Carolina on the basis of these developments and associated expectations began planning a nucleus around which its anticipated, expanded fishing industry would grow and thrive. Specifically, it conceptualized and began developing a seafood industrial park at the Village of Wanchese, North Carolina. This old fishing village is located on the southeast side of Roanoke Island approximately 10 miles north of Oregon Inlet. The concept of the park is to provide a complete and efficient commercial seafood handling/ processing center embodying all the product and service elements necessary for handling catches and servicing vessels engaged in an intense commercial fishing industry. The State's role is to construct and maintain the industrial park's basic infrastructure and to provide overall park management for the multitudinous product/services facilities planned to be constructed and operated by private investor/ tenants. All in all, the concept is one of a joint venture involving the Federal Government in the provision of navigation routes and assured safe access at a cost of about $100 million; the State in its role as just outlined at a cost of approximately $8 million; and private enterprise in building and operating the planned park facilities at an investment level of $30 to $50 million. To date, the only elements of this venture that have been completed are: (a) the 15-acre harbor basin at Wanchese which is part of the authorized project; (b) the Wanchese Seafood Industrial Park infrastructure which includes bulkheaded berthing area, hardstands, roads, utilities, waste treatment facilities, and administration building; and (c) a single investor/tenant facility providing trawler out-haul and repair services. This private facility did not succeed due to movement of trawlers away from Wanchese over the past several years as a result of the hazardous conditions in Oregon Inlet. Therefore, the trawler out-haul and repair facility has been subleased to the State of North Carolina for the maintenance and repair of ferries operated by the N. C. Department of Transportation. The sources, applications, and magnitudes of funds expended to date in the Wanchese Seafood Industrial Park are listed below:

| SOURCES | APPLICATIONS | MAGNITUDE |
|---|---|---|
| Coastal Plains Regional Commission | Engineering and Land Purchase | $ 585,000 |
| State of North Carolina | Industrial Park Construction | 2,500,000 |
| Federal Economic Development 'dministration | Industrial Park Construction | 4,515,000 |
| Corps of Engineers | Expansion of Wanchese Harbor Basin | 510,000 |
| Private Investment | Trawler Out-haul and Repair | 1,590,000 |
| | TOTAL | $9,700,000 |

Future private investment is highly dependent on an assured navigation channel at Oregon Inlet which can only be provided by jetty stabilization. If that development should occur, the Wanchese Seafood Industrial Park would be capable of processing 58,000,000 pounds of seafood products per year and, in doing so, would provide about 500 primary and 125 secondary jobs.



OREGON INLET
OCEAN BAR CHANNEL
CONTROLLING DEPTHS
1960-1983

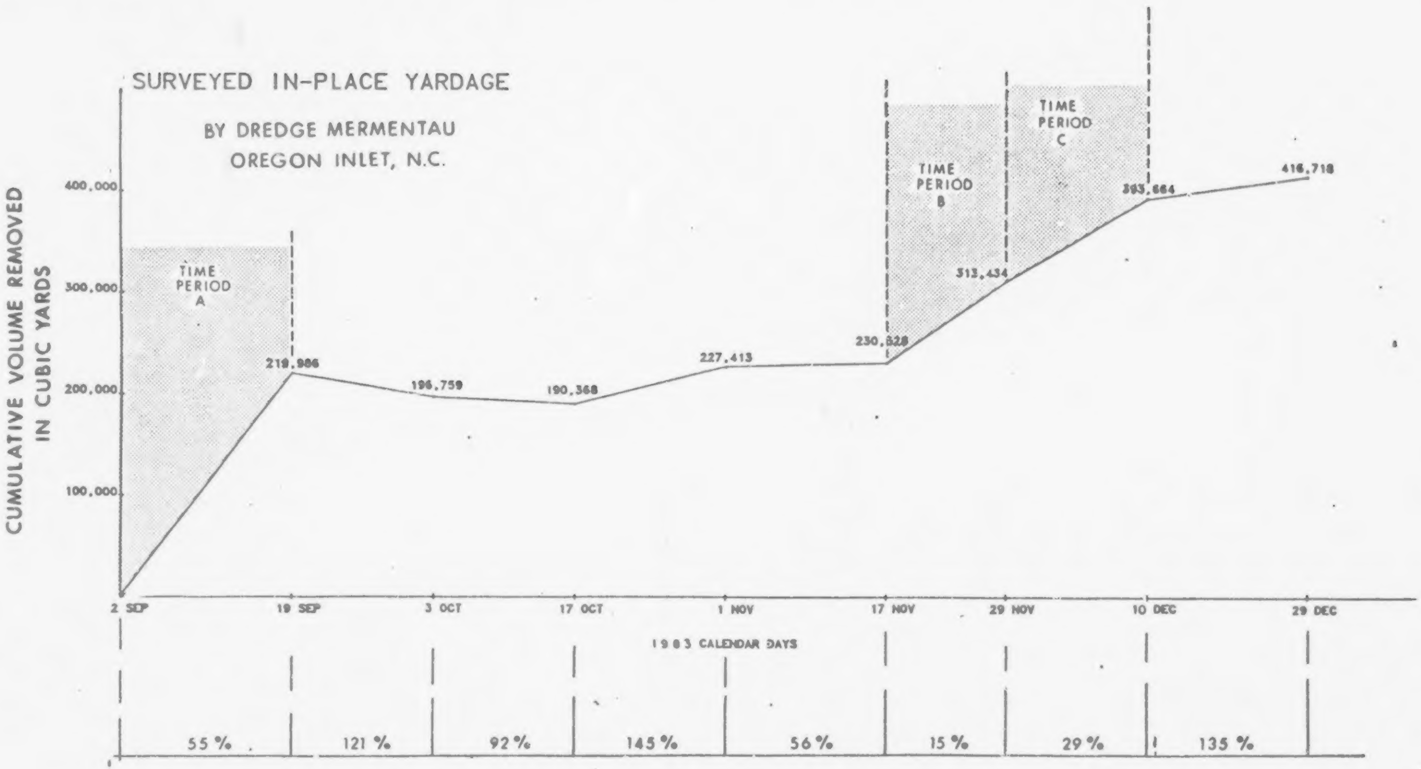
*DREDGING IN NEW SOUTH CHANNEL BY DREDGE "MERMENTAU"

FIGURE 1

TABLE I

Oregon Inlet Dredging History

| Fiscal Year | Dredges | Volume Removed cu. yds. | Dredging Cost Current Price Level $ |
|---|---|---|---|
| 1960 | HYDE | 62,991 (New Work) | $192,000 |
| 1961 | HYDE | 24,013 (New Work) | 132,000 |
| 1962 | HYDE | 109,186 (Maintenance) | 252,000 |
| 1963 | HYDE | 76,868 (Maintenance) | 230,000 |
| 1964 | HYDE & MERRITT | 20,600 (Maintenance) | 502,000 |
| 1965 | HYDE & MERRITT | 283,546 (Maintenance) | 531,000 |
| 1966 | HYDE & MERRITT | 184,733 (Maintenance) | 500,000 |
| 1967 | HYDE | 215,232 (Maintenance) | 216,000 |
| 1968 | HYDE & MERRITT | 297,176 (Maintenance) | 1,143,000 |
| 1969 | HYDE & MERRITT | 202,036 (Maintenance) | 1,337,000 |
| 1970 | HYDE, MERRITT, SCHWEIZER | 170,745 (Maintenance) | 986,000 |
| 1971 | HYDE | 132,149 (Maintenance) | 840,000 |
| 1972 | HYDE & MERRITT | 434,355 (Maintenance) | 1,704,000 |
| 1973 | MERRITT & SCHWEIZER | 60,445 (Maintenance) | 381,000 |
| 1974 | MERRITT & SCHWEIZER | 219,772 (Maintenance) | 929,000 |
| 1975 | SCHWEIZER | 182,068 (Maintenance) | 257,000 |
| 1976 & 76T | SCHWEIZER | 372,463 (Maintenance) | 1,081,000 |
| 1977 | SCHWEIZER | 312,485 (Maintenance) | 945,000 |
| 1978 | MERRITT & SCHWEIZER | 358,127 (Maintenance) | 1,014,000 |
| 1979 | SCHWEIZER | 415,000 (Maintenance) | 970,000 |
| 1980 | SCHWEIZER | 438,000 (Maintenance) | 732,000 |
| 1981 | SCHWEIZER, MERRITT, & CURRITUCK | 693,080 (Maintenance) | 1,190,000 |
| 1982 | SCHWEIZER, MERRITT, & FRY | 981,217 (Maintenance) | 1,876,000 |
| 1983 | SCHWEIZER, MERRITT, FRY, & MERMENTAU | 1,034,416 (Maintenance) | 2,92 ,000 |
| 1984 | SCHWEIZER, MERRITT, FRY, & MERMENTAU | ------- | 4,561,000 (Projected) |



MEASURED WAVE ENERGY LEVELS DURING 1983 DREDGING OPERATIONS WITH VALUES IN PERCENT OF AVERAGE INCOMING WAVE ENERGY EXPECTED SEPT. THRU DEC. AS BASED ON LONG TERM WAVE MEASUREMENTS.

FIGURE 2

ANSWERS TO QUESTIONS ON S.1471 SUBMITTED BY U.S. SENATOR JAMES ABDNOR

QUESTION 1. Is it accurate that the state has calculated that the impact of the jetties on shoreline erosion will extend as far as 10 to 12 miles away from the jetties? Would you comment on this calculation?

ANSWER 1. The only scientific/engineering studies of the type referred to in Question 1 are those conducted by the Corps of Engineers in connection with the Manteo (Shallowbag) Bay project, and which have been reviewed by the State of North Carolina. The Corps investigations related to shoreline behavior with and without jetty stabilization at Oregon Inlet, and involved comprehensive scientific analyses of 18 miles of ocean shoreline extending 9 miles north and 9 miles south of Oregon Inlet. On the basis of these analyses, the shoreline zones influenced by the proposed jetties and the related need for sand bypassing could be clearly determined. Today, there is a replete scientific/engineering documentation on the behavior of shorelines adjacent to the numerous stabilized ocean entrances along sandy shores around the world. In the many extant cases where no provisions for sand bypassing exist, the patterns of downcoast erosion are consistent and can now be demonstrated by purely analytical simulation techniques. The phenomenon, in general terms, occurs as follows. Waves approaching a sandy shore at oblique angles break and generate currents which drive sediments along or parallel to the shoreline. The wave-driven sediments on entering an inlet environment are, in part, deposited on the inlet shoal complex, while the remaining fraction is bypassed to the immediately adjacent downcoast shoreline under the influence of wave and tidal currents. On being naturally bypassed to the immediately adjoining downcoast shore, the sediments are moved farther along the coast by wave-generated currents. If the sediments, otherwise bypassing an inlet by natural means, are interdicted by a jetty structure without provision for artificial bypassing, erosion will first occur along a segment of shore immediately adjacent to and downcoast of the inlet. That is, the sediment-carrying capacity of the wave-generated current flow is, under such circumstances, fulfilled by sediments eroded from the shore juxtaposed to and downcoast of the inlet. Farther downcoast, the beaches do not immediately experience any change since, in metaphoric terms, they do not know or care from what sources sediments are being supplied to their respective littoral transport zones. However, in time, the initially eroding segment of shore will begin adjusting to the erosive forces so as to diminish or completely counter their effects. Generally, this occurs by the eroding segment retreating to an alignment approximately parallel to the destructive incoming waves. Since the waves no longer break at an angle to the shoreline, alongshore currents cannot be generated, and sediment transport along the previously eroding shore is significantly reduced or eliminated. As this occurs, the immediately adjoining downcoast shore segment, deprived of the sediments that were being furnished by the initially eroding neighbor, begins to experience erosion. It is through the basic phenomenon described above, known as a diffusive process, that erosion resulting from an interdiction of littoral sediments progresses from the point of interdiction, over space and time to points farther downcoast. The important point is that jetty-induced erosion, in the absence of artificial sand bypassing, is a progressive phenomenon initiated at and near the structural interdiction of the littoral sediments. Hence, the successful practice of artificial sand bypassing is directed at placing transferred sediments along the segment of shore immediately adjacent to and downcoast of the stabilized inlet, thereby obviating the initiation of the progressive erosion that would otherwise occur. In the case of Oregon Inlet, the artificially bypassed sediments would be placed along a downcoast shoreline length of about 3 miles beginning at the inlet.

QUESTION 2. How close to the shoreline would the proposed sand bypass system be stationed? Would there be noise or visual pollution associated with its operation?

ANSWER 2. On an average annual basis, deployment of the sand bypassing system would be 1 to 2 months each year, depending on sea conditions during specific operations. Dredging operations would be conducted from the shoreline to a distance of about 1,500 feet offshore. Though some noise would be generated by the dredge plant, it would often be muffled in the background of breaking surf. Many dredging operations take place each year near highly developed coastal areas in North Carolina, but noise and visual perception of dredges have not been sources of public complaints.

QUESTION 3. Please comment on the allegation made by Mr. Ken Hunter on January 30, 1984, before the House Subcommittee on Public Lands and National Parks that the jetties, if built, will not contribute to vessel safety and may in fact increase the danger to vessels in certain aspects.

ANSWER 3. Oregon Inlet, in its natural state, is extremely hazardous as is amply evidenced by the number of vessel groundings and losses which have occurred at that location in recent years. There are a number of causal factors creating this hazardous condition which would not exist if the inlet were stabilized by jetties. First, the incoming wave crests are severely bent by the refraction phenomenon occurring over the entire ebbtide delta, causing the complex crossing wave crest patterns characteristic of unprotected inlets. The multiple directions of wave travel are coupled with the breaking of waves at the inlet due to shallow waters and unpredictable cross curents generated by the combination of wave and tidal currents. Added to the turbulent hydraulic conditions of the unprotected inlet entrance is the horizontal instability of the inlet channel which tends to "wag" or move about in response to the direction of predominant sediment influx in any given time period. Also, a single storm can, in a matter of hours, not only cause major shifting of channel position, but can fill the channel well above the project depth level, with this occurring at the very time when vesels using the inlet are experiencing their maximum uncontrolled vertical and horizontal movements. Additionally, with heavy seas, channel marker buoys are suppressed by strong ebb or flood currents and obscured by the turbulence of breaking waves or "white water" conditions throughout the unprotected entrance channel. Thus, with heavy seas running, a frequent condition at Oregon Inlet, the pilot of a vessel navigating the unprotected channel is confronted with breaking seas from all directions, including abeam, with cross currents, poor channel marker visibility, and the possibility of the channel having shifted and/or shoaled. These conditions, singularly or in combination, present grave danger to the safety of vessel and crew. In contrast, the inlet stabilized by the proposed jetties affords a dependable channel at all times, and wave exposure is limited to bow or stern quartering seas and head or trailing seas which present the least danger to vessels under rough sea conditions.

QUESTION 4. At least one geologist who has studied the area has warned that by "hardening" the inlet with the jetties, there is the danger that storm flooding will increase in the surrounding areas and result in the opening up of a new inlet. Please respond in detail to this charge.

ANSWER 4. The natural history of the "Outer Banks" of North Carolina is punctuated by recurrent openings of inlets through its narrow and relatively low barrier islands. Some of the inlets have closed in short periods of time, while others have persisted for long durations. These episodic events in the course of future history will occur with or without jetties at Oregon Inlet or any other inlet within that region. In the project studies and designs, the Corps' responsibility was to assure that the plan for stabilization of Oregon Inlet would not enhance the probability of new inlet creation or the increase of existing flood potentials along the developed periphery of Pamlico Sound. Accordingly, comprehensive and complex mathematical, as well as hydraulic model studies, were conducted to ensure that the jetty alignments and spacings would not impede the flow of storm-generated waters through Oregon Inlet. The model studies were calibrated and verified by data from actual major storm events which caused the maximum tides of record along both the ocean and estuarial shores of the region. The hydraulic model simulated storm tides within an area of approximately 25 square miles in which the inlet was centered, whereas, the mathematical model encompassed the offshore Continental Shelf and entire estuarial region of northeastern North Carolina including Pamlico and Albemarle Sounds. Within the areal extent covered by the hydraulic model, the hydraulic model and mathematical model tests both demonstrated that under the most constricted jetty spacing of 2,500 feet, increases in storm tide levels would be confined to the proximate location of the inlet and that such tide level increases would be small and acceptable in magnitude. Specifically, the increase in tide was 0.6 to 0.7 foot at a distance of 3,500 feet from the center of the inlet and only 0.2 foot at a distance of 8,000 feet from the inlet's centerline. Moreover, these small tide increases were based on conditions wherein the extensive shoals now existing in the inlet did not change. When the estimated scour of these shoals was introduced in the hydraulic model, the maximum increase in tide was reduced to 0.2 foot along the land periphery proximate to the inlet. In any case, with or without the scour of inlet shoals, the small increases in storm tide near the inlet, under the narrowest possible jetty spacing, pose no dangers in terms of flooding or inlet breakthroughs. Furthermore, the mathematical model studies which covered a much greater geography than the hydraulic model investigations revealed that in the developed areas of Nags Head situated 9 miles north of Oregon Inlet, the jetty plans would have absolutely no effect on storm tides.

QUESTION 5. Please describe in detail the history and levels of funding and agencys involved in Federal and non-federal investment at Wanchese Seafood Industrial Park. What is the present fish processing capability at the Industrial Park. What percentage of that capacity has been used during the past three years?

ANSWER 5. There are no fish processing plant(s) in the Wanchese Seafood Industrial Park which, at present, is only a basic infrastructure for a future fisheries industry complex. The history of the industrial park concept has its roots in the 1960's when the Federal Government demonstrably recognized the necessity for improving our overall national commercial fishing capability vis-a-vis the intensive harvesting of fisheries resources over the U.S. Continental Shelf by well equipped foreign fishing fleets, of which some of the most active represented Communist bloc nations totally supported by their respective governments. This recognition resulted in Federal programs implemented in the 1970's that were aimed at establishing the United States' fisheries industry in a position of world prominence and at a competitive level with existing modern foreign fleets. Briefly, there were three important national programs set in motion, namely: (a) our Government's involvement in international agreements to limit the exploitation of the fisheries resources of various national continental shelves by fleets of foreign nations - this international program was implemented in 1977; (b) the Capital Construction Fund program was instituted and allowed fishermen to place tax-free earnings in funds specifically earmarked for the purchase of vessels and equipment; and (c) the Fishing Vessel Obligation Guarantee program whereby the Federal Government underwrote loans to fishermen for the purchase of new trawlers. In the case of the State of North Carolina and its fishing industry, further inducement to modernize existed by virtue of the Manteo (Shallowbag) Bay project which was authorized in 1970 and promised to stabilize the dynamic and treacherous Oregon Inlet. Apart from the impact of the aforementioned Federal programs and project authorization on the purchases of new and larger fishing vessels, the State of North Carolina on the basis of these developments and associated expectations began planning a nucleus around which its anticipated, expanded fishing industry would grow and thrive. Specifically, it conceptualized and began developing a seafood industrial park at the Village of Wanchese, North Carolina. This old fishing village is located on the southeast side of Roanoke Island approximately 10 miles north of Oregon Inlet. The concept of the park is to provide a complete and efficient commercial seafood handling/processing center embodying all the product and service elements necessary for handling catches and servicing vessels engaged in an intense commercial fishing industry. The State's role is to construct and maintain the industrial park's basic infrastructure and to provide overall park management for the multitudinous product/services facilities planned to be constructed and operated by private investors/tenants. All in all, the concept is one of a joint venture involving the Federal Government in the provision of navigation routes and assured safe access at a cost of about $100 million; the State in its role as just outlined at a cost of approximately $8 million; and private enterprise in building and operating the planned park facilities at an investment level of $30 to $50 million. To date, the only elements of this venture that have been completed are: (a) the 15-acre harbor basin at Wanchese which is part of the authorized project; (b) the Wanchese Seafood Industry Park infrastructure which includes bulkheaded berthing areas, hardstands, roads, utilities, waste treatment facilities, and administration building; and (c) a single investor/tenant facility providing trawler out-haul and repair services. This private facility did not succeed due to movement of trawlers away from Wanchese over the past several years as a result of the hazardous conditions in Oregon Inlet. Therefore, the trawler out-haul and repair facility has been subleased to the State of North Carolina for the maintenance and repair of ferries operated by the N.C. Department of Transportation. The sources, applications, and magnitudes of funds expended to date in the Wanchese Seafood Industrial Park are listed below:

| SOURCES | APPLICATIONS | MAGNITUDES |
|---|---|---|
| Coastal Plains Regional Commission | Engineering and Land Purchase | $ 585,000 |
| State of North Carolina | Industrial Park Construction | 2,500,000 |
| Fedeal Economic Development Admin. | Industrial Park Construction | 4,515,000 |
| Corps of Engineers | Expansion of Wanchese Harbor Basin | 510,000 |
| Private Investment | Trawler Out-haul and Repair | 1,590,000 |
| | TOTAL | $9,700,000 |

Future development of the industrial park superstructure through private investment is highly dependent on an assured navigation channel at Oregon Inlet which can only be provided by jetty stabilization. If that development should occur, the Wanchese Seafood Industrial Park would be capable of processing 58,000,000 pounds of seafood products per year and, in doing so, would provide approximately 500 primary and 125 secondary jobs.

QUESTION 6. Please describe why recent dredging of the Oregon Inlet has, according to channel profiles provided to the Subcommittees, in many places been to depths of 25 feet or greater? Is there significantly greater cost associated with dredging to this depth than to the authorized 14 feet? If so, how much and what is the percentage increase in costs? How long has the Corps been dredging the channel to these increased depths?

ANSWER 6. The results and future expectations regarding maintenance dredging in Oregon Inlet, which began in the summer of 1983 and is still in progress, cannot be divorced from the long history of such operations which began at that inlet in 1962. Considerable background information pertaining to maintenance dredging from 1962 to the present is provided in answers to Questions 1(f) and 2 submitted by Senator Robert T. Stafford. It is respectfully recommended that those answers be considered in addition to the following response. In planning the employment of a hopper dredge in 1983 to work in combination with sidecasting dredges at Oregon Inlet, it was anticipated that dredging depths would range from 14 to about 17 feet below low water. In effect, this would allow a 3-foot overdepth below the existing project depth of 14 feet at low water as is customary. Overdepth allowances are necessary to account for the variability of excavation levels inherent to dredging operations. Also, the removed overdepth volume provides storage, below project depth, for shoal material accumulation subsequent to completion of dredging. However, in the course of dredging operations, it became evident that the channel could not be expanded from a self limiting width of about 200 feet with dredging depths of 17 feet. This constraint existed because the steep side banks of the channel, against which it was dangerous to operate, would not "cave" or fall to the deeper channel where safe removal would be possible. Accordingly, the hopper dredge MERMENTAU began dredging to depths between 17 and 26 feet in an attempt to destabilize the toes of the side banks and "cave" the material to the adjacent deeper areas where safe removal could be effected. This procedure was only partially successful and the channel width could not be increased until the shallow draft sidecast dredge MERRITT began operating over the resistant channel side banks, casting the dredged material into the deeper channel from which it was removed by the MERMENTAU. It is remarked that considerable overdepth dredging has been previously conducted at Oregon Inlet. Condition surveys of past dredging episodes involving the hopper dredge HYDE or the various sidecasters show dredging depths varying from 14 to 20 feet at low water. As stated above, the minimum channel width and depth range at the end of December 1983 were 270 feet and 14 to 26 feet, respectively. Dredging operations are continuing with the sidecasters. The latest condition survey conducted 19 February 1984 shows a minimum channel width of about 270 feet with depths ranging from 12 to 25 feet. The fate of the channel over the remaining winter period of 1984 will depend on the sea conditions that will occur over that particular period. The expenditures for maintenance dredging at Oregon Inlet beginning in Fiscal Year 1962 and extending to the present are shown on attached table 1. Total expenditure between FY's 1962 and 1983 amount to $20,543,000, giving an average annual expenditure of about $934,000. If the last 3 complete fiscal years, FY's 81-83, are considered, total expenditures reached $5,993,000, giving an average annual expenditure of $1,998,000. For either of the periods referenced above, provision of navigable depths through Oregon Inlet were short-lived or not met. During the first quarter of FY-1984, approximately $2 million were expended in dredging operations, and it is projected that an additional $2.5 million will be expended over the remaining 3 quarters of this fiscal year. The adequacy of that level of funding, that is $4.5 million per year, remains to be seen, particularly in regard to the fact that weather and sea conditions at Oregon Inlet have been unusually favorable for dredging operations in this winter, up to this point in time. However, on the basis of past poor results and expected FY-84 requirements, an expenditure of $4.5 million per year is expected to be minimal for providing nominal navigation requirements. On the basis of that value, costs have increased 481 percent over long term average expenditures per year (1962-1983) and 225 percent over recent average annual expenditures (1981-1983).

TABLE I

Oregon Inlet Dredging History

| Fiscal Year | Dredges | Volume Removed cu. yds. | Dredging Cost Current Price Level $ |
|---|---|---|---|
| 1960 | HYDE | 62,991 (New Work) | $192,000 |
| 1961 | HYDE | 24,013 (New Work) | 132,000 |
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| 1983 | SCHWEIZER, MERRITT, FRY, & MERMENTAU | 1,034,416 (Maintenance) | 2,927,000 |
| 1984 | SCHWEIZER, MERRITT, FRY, & MERMENTAU | ------- | 4,561,000 (Projected) |

## ANSWERS TO QUESTIONS ON S.1471 SUBMITTED BY U. S. SENATOR JOHN H. CHAFEE

### QUESTION 1.

(a) When the project was authorized in 1970, what was its estimated cost?

(b) What is the current cost estimate?

(c) Please break down the current estimate into (i) construction cost, (ii) annual costs of operation and maintenance and sand bypassing, and (iii) the amortized cost over an estimated project life of 50 years.

ANSWER 1(a). When authorized in 1970, the total first cost of the Manteo (Shallowbag) Bay project was estimated at $11,196,000, and average annual operation and maintenance costs were estimated at $261,900.

ANSWER 1(b). The latest approved estimates based on October 1983 price levels give a total project first cost of $99,086,000 and total annual operation and maintenance costs of $4,212,000, of which $3,668,000 are related to average annual sand bypassing costs.

ANSWER 1(c). Answers to subquestion (i) and (ii) are given above in Answer 1(b). The following information is provided with respect to subquestion (iii). The project first construction cost is presently estimated at $99,086,000 as stated above. The annual amortized value of this cost is $232,000. This means that investing $232,000 every year for 50 years at a 7.125 percent interest rate will recover the project's first construction cost at the end of the 50-year period.

Therefore:

| | |
|---|---|
| .Amortization of Project First Cost<br>($232,000 x 50 years) | $11,600,000 |
| .Sand Bypassing Costs<br>($3,668,000 x 50 years) | 183,400,000* |
| .Other Operation and Maintenance Costs<br>($544,000 x 50 years) | 27,200,000* |
| TOTAL | $222,200,000 |

The above is in response to the question as stated. However, in terms of actual Federal appropriations, the following costs would be incurred over a 50-year period.

| | |
|---|---|
| .Project's First Construction Cost | $ 99,086,000 |
| .Sand Bypassing Costs<br>(3,668,000 x 50 years) | 183,400,000* |
| .Other Operation and Maintenance Costs<br>($544,000 x 50 years) | 27,200,000* |
| TOTAL | $309,686,000 |

*Operation and maintenance costs for the existing 14-foot project have not been netted out of these costs and could result in a substantial reduction of these costs in terms of "net economic costs."

QUESTION 2.

(a) Why is the economic analysis being revised?

(b) When did you begin the reanalysis?

(c) When will it be completed?

ANSWER 2(a). The original economic analysis was completed in July 1977 after significant input, coordination, and review by Federal agencies including the Departments of Commerce, Interior, and Army. Despite these reviews, a significant error in the amount of marine resources available for harvest was overlooked. In 1976 it was believed that approximately 1 billion pounds of marine resources previously harvested by foreign fleets would be available for the U. S. fishing industry in the Atlantic Ocean from New York south to Cape Hatteras, North Carolina. The actual harvest in 1976 was 341.0 million pounds or about 32.5 percent of that originally used in the analysis. The error was discovered in early 1982 and was reported to the Assistant Secretary of the Army for Civil Works who requested an internal Army review of the project's economic analysis. This review confirmed the error, and the Assistant Secretary of the Army directed the Corps of Engineers to reanalyze the project's benefits.

ANSWER 2(b). The reanalysis was initiated on 1 October 1982.

ANSWER 2(c). The Wilmington District is submitting a revised draft report on 29 February 1984. Internal review, report revisions, and public release are scheduled for completion on 30 June 1984.

QUESTION 3.

(a) Do you agree that the success of the project depends on sand bypassing?

(b) Has this sand bypass system been used anywhere in the U. S.?

(c) Is it true that the floating breakwater, an essential element of the sand bypass system, is still in the research and development stage?

(d) Has it been deployed in any work environment that closely approximates conditions of Oregon Inlet?

(e) Is there any evidence that the sand bypass and breakwater system are capable of withstanding the high surf that is common throughout most of the year at Oregon Inlet?

ANSWER 3(a). The overall success of the project does depend on sand bypassing as is the general case for any similar projects now being constructed along the world's sandy coastlines where adjoining beaches merit protection either on economic bases or on social desires for environmental preservation.

ANSWER 3(b). When operating, the Oregon Inlet system would perform in a manner similar to a sand bypassing system which has operated very successfully since 1960 at Channel Islands Harbor, California. The difference between the Oregon Inlet and Channel Islands Harbor systems is that a transportable breakwater would be employed at Oregon Inlet; whereas, in the case of the Channel Islands Harbor project, a permanent stone breakwater is utilized. Development and design of transportable breakwater have been a cooperative effort between the Corps of Engineers and the U. S. Navy. This system was adopted because: (a) it is capable of bypassing subaqueous as well as subaerial (above water) sediment accumulations, (b) it can reach the accumulated sediments regardless of their distribution over the natural sea bed, (c) the system has no limitations on the quantities of sediment that can be bypassed during any given operation, and (d) the system can be employed to bypass material northward as well as southward, if required, without special technical provisions. Furthermore, this system would be deployed at the site only during the bypassing operations, thus minimizing visual distraction in the open water areas adjacent to the jetties. In this regard, during early coordination (1975-1977) of project design with the Department of the Interior, the Corps was requested to develop a sand bypassing system that would not be visually offensive or create an attractive nuisance. The primary sand bypassing system described above can be used during any part of the year at the project site, but is planned for primary use annually in the period May and June or June and July. However, there may be some instances in the life of the project for which a smaller bypassing system could be employed to advantage in terms of cost and timing. For example, abnormally high unidirectional littoral transport rates during a given year could create a condition in which it would be desirable to perform an intermediate sand bypassing operation between the regularly scheduled operations involving the primary system. To meet such an eventuality, a secondary sand bypassing system has been designed. This secondary system consists of a portable dredge operation which can remove the subaerial portion of the accumulated sediments against the updrift jetty and transport same to the other side of the inlet. This particular system is also highly flexible in regard to the quantities of sediment that can be excavated and transported, and the direction of transport, i.e., southward or northward, with equal facility. There is nothing new in terms of operational concept or equipment as regards the secondary sand bypassing system. Indeed, the employment of such a system and analogous sand transfer operation has taken place near the Oregon Inlet site. Specifically, the operation, which took place in 1971, involved the transfer of approximately 300,000 cubic yards of sand from the exposed cuspate foreland at Cape Hatteras northward for a distance of about 3.5 miles where the material was deposited on the beach fronting the town of Buxton.

ANSWER 3(c). Development and design of a transportable breakwater has been a cooperative effort between the Corps of Engineers and the U. S. Navy, and has also involved specialized Architect-Engineer services in marine structures design. There are presently 30 detailed scientific/engineering documents pertaining to the testing, development, and design of the basic breakwater module that would be employed in sand bypassing at Oregon Inlet if the inlet is stabilized by jetties. Basic structural design of the module and its moorings has been completed and consists of a post-tensioned concrete structure having a width of 130 feet, length of 90 feet, and overall depth of 5.5 feet. It is currently estimated that a total of six modules will comprise the overall breakwater assemblage of the sand bypassing system. This provides a protected shadow zone front of 780 feet. Each module is a barge-like structure which, in its operational mode, is partially submerged with the shoreward or protected end ballasted so as to be near to or resting on the sea floor, while the other end of the structure protrudes above the water surface and faces in the direction of incoming waves. Current investigations being conducted in connection with the breakwater system pertain to optimizing field operations and attaining economies of scale during dredging operations. Specifically, a study is now underway to determine if there is any relative advantage in coupling two modules together rather than mooring each module singularly. Another ongoing study is directed at establishing the optimal arrangement of the modules in the field so as to attain the greatest possible level of wave attenuation and, hence, the highest production output from the protected dredge plant. These final studies are scheduled for completion in October 1984. This will be followed with the preparation of a Feature Design Memorandum - a single document that will be a composite synthesis of the entire development/design program for the sand bypassing system. This document is scheduled for completion in April 1985.

ANSWER 3(d). The particular breakwater module and its application, as described in Answer 3(c) above, has not been previously deployed. However, it is emphasized that the technology utilized in the design of the floating breakwater and moorings is widely applied in the design of ship hulls, moorings, and marine structures which operate daily in ocean environments far more hostile than the Oregon Inlet site.

ANSWER 3(e). The breakwater modules and related moorings have been designed to withstand such storms without necessity for removal of the system to a harbor of refuge; specifically, the design of the modules, moored in place, is based on wave heights of 18.0 feet and wave periods of 10 seconds and with an applied safety factor of 2.6. Nearshore ocean wave characteristics have been measured near the Oregon Inlet project site since 1964 on a daily basis, except for short intervals associated with gage malfunctions. In the total 19-year period, the largest wave recorded had a height of 15.5 feet and a period of 10 seconds. Though the general wave climate at the Oregon Inlet site is severest during the winter season, the largest recorded wave, as referred to above, was measured during a storm which occurred in June 1966. Based on the long period of site wave data and the adopted design levels, the combined structural and attitudinal integrity of the breakwater assemblage will withstand any of the normal wave conditions expected at the site including the common storm events. Therefore, in the course of sand bypassing operations, the breakwater units will be removed and secured in a harbor of refuge only in the event of an approaching storm of hurricane intensity. In such a case, the entire system can be removed and secured in safety within a 4- to 5-day period. Since hurricanes are routinely located and tracked for periods extending over one week, there are no foreseeable problems in securing the system in advance of hurricane arrival. Moreover, the planned timing of sand bypassing operations is such as to render extremely remote any possibility of having to secure the bypassing system against hurricane exposure. In this regard, total deployment of the sand bypassing system will be 1 to 2 months depending on sea conditions during specific operations. These operations will be generally performed in May and June, or June and July. Records of hurricanes affecting various U. S. coastal areas, on a county basis, are maintained by the National Hurricane Center, National Weather Service, Miami, Florida. The record for the project site, Dare County, N. C., extends to the present from the year 1900. In that 83-year period of hurricane seasons, only 10 such storms have directly affected the area, and another 9 storms have only indirectly affected the area. Of the total of 19 storms, the occurrences by month were: 4 in July; 6 in August; 7 in September; and 2 in October.

QUESTION 4.

(a) Isn't this the first year that a split-hulled hopper dredge was used to replace a side-caster?

(b) Are the fishing trawlers using the channel now?

(c) How wide and how deep is the channel now?

(d) What did you spend on dredging last year to reach these channel dimensions?

(e) Rather than running through a random sampling, would you provide for the record a listing of how much the Corps spent on dredging this channel in each of the last ten years?

ANSWER 4(a). A split-hull hopper dredge was used for the first time in Oregon Inlet during the period 2 September - 31 December 1983. The nomenclature, that is, "split-hull," refers to the hull construction which consists of two longitudinal vessel hull halves which are hinged together and are opened or closed by hydraulic rams. While operating, the hull halves are closed together, and the dredging procedure is identical to a conventional trailer-suction hopper dredge. The only functional difference between the split-hull and conventional hopper dredge is the manner in which the dredged material, accumulated in the respective dredge bins, is released over the disposal area. In the former case, the hull halves are forced apart ("split") by hydraulic rams and the bin material is released. In the conventional hopper dredge, sliding doors in the hull are actuated by hydraulic machinery to open and close the bin storage area. A conventional hopper dredge was used in Oregon Inlet over the period 1960-1972.

ANSWER 4(b). Fishing trawlers are now using Oregon Inlet, but are doing so with restrictive precautions in using high tides and daylight hours as they have over past years.

ANSWER 4(c). The latest condition survey conducted 19 February 1984 shows a minimum channel width of about 270 feet with depths ranging from 12 to 25 feet. The fate of the channel over the remaining winter period of 1983/84 will depend on the sea conditions that will occur over the particular period.

ANSWER 4(d). The dredging effort to establish and maintain the present channel dimensions began in May 1983 and is continuing at this time. Total expenditures for this operation between 1 May 1983 and 31 January 1984 amount to $4,313,273 in accordance with the tabulation given below.

MAINTENANCE DREDGING EXPENDITURES, OREGON INLET
1 MAY 1983 THROUGH 31 JANUARY 1984

FY-83 (1 MAY 1983 - 30 SEPTEMBER 1983)

| DREDGE PLANT | EXPENDITURE |
|---|---|
| SCHWEIZER (SIDECAST ) | $ 388,938 |
| MERRITT ( " ) | 185,460 |
| FRY ( " ) | 535,034 |
| MERMENTAU ( HOPPER ) | 877,873 |
| FY-83 SUBTOTAL | $1,987,305 |

FY-84 (1 OCTOBER 1983 - 31 JANUARY 1984)

| DREDGE PLANT | EXPENDITURE |
|---|---|
| SCHWEIZER (SIDECAST ) | $ 333,028 |
| MERRITT ( " ) | 148,158 |
| FRY ( " ) | 171,298 |
| MERMENTAU ( HOPPER ) | 1,673,484 |
| FY 84 SUBTOTAL | $2,325,968 |
| TOTAL EXPENDITURE | $4,313,273 |

In addition to the expenditures given above, it is anticipated that $2,235,032 will be expended in continued maintenance dredging over the remaining portion of FY-1984 (1 February - 30 September 1984). This gives a total projected FY-84 expenditure of $4,561,000 or, in round numbers, $4.5 million.

ANSWER 4(e). The expenditures for maintenance dredging at Oregon Inlet, beginning in Fiscal Year 1962 and extending to the present, are shown on attached table 1. Total expenditures between FY's 1962 and 1983 amount to $20,543,000, giving an average annual expenditure of about $934,000. If the last 3 complete fiscal years, FY's 81-83, are considered, total expenditures reached $5,993,000, giving an average annual expenditure of $1,998,000. For either of the periods referenced above, provision of navigable depths through Oregon Inlet were short-lived or not met. During the first quarter of FY-1984, approximately $2 million were expended in dredging operations, and it is projected that an additional $2.5 million will be expended over the remaining 3 quarters of this fiscal year. The adequacy of that level of funding, that is, approximately $4.5 million per year, remains to be seen, particularly in regard to the fact that weather and sea conditions at Oregon Inlet have been unusually favorable for dredging operations in this winter, up to this point in time. However, on the basis of past poor results and expected FY-84 requirements, an expenditure of $4.5 million per year is expected to be minimal for providing nominal navigation requirements. In conclusion, the costs of past and present maintenance dredging efforts at Oregon Inlet do not, per se, reflect attendant results or expectations as regards the provision of nominal navigation improvements at that inlet. The return or value of these expenditures can only be measured within the context of the history of the maintenance dredging operations which have been routinely conducted since 1962. A summary of that history is provided in answers to Questions 1(f) and 2 submitted by U. S. Senator Robert T. Stafford. It is respectfully recommended that those answers be considered in the evaluation of the dredging cost record.

TABLE 1

Oregon Inlet Dredging History

| Fiscal Year | Dredges | Volume Removed cu. yds. | Dredging Cost Current Price Level $ |
|---|---|---|---|
| 1960 | HYDE | 62,991 (New Work) | $192,000 |
| 1961 | HYDE | 24,013 (New Work) | 132,000 |
| 1962 | HYDE | 109,186 (Maintenance) | 252,000 |
| 1963 | HYDE | 76,868 (Maintenance) | 230,000 |
| 1964 | HYDE & MERRITT | 20,600 (Maintenance) | 502,000 |
| 1965 | HYDE & MERRITT | 283,546 (Maintenance) | 531,000 |
| 1966 | HYDE & MERRITT | 184,733 (Maintenance) | 500,000 |
| 1967 | HYDE | 215,232 (Maintenance) | 216,000 |
| 1968 | HYDE & MERRITT | 297,176 (Maintenance) | 1,143,000 |
| 1969 | HYDE & MERRITT | 202,036 (Maintenance) | 1,337,000 |
| 1970 | HYDE, MERRITT, SCHWEIZER | 170,745 (Maintenance) | 986,000 |
| 197 | HYDE | 132,149 (Maintenance) | 840,000 |
| 1972 | HYDE & MERRITT | 434,355 (Maintenance) | 1,704,000 |
| 1973 | MERRITT & SCHWEIZER | 60,445 (Maintenance) | 381,000 |
| 1974 | MERRITT & SCHWEIZER | 219,772 (Maintenance) | 929,000 |
| 1975 | SCHWEIZER | 182,068 (Maintenance) | 257,000 |
| 1976 & 76T | SCHWEIZER | 372,463 (Maintenance) | 1,081,000 |
| 1977 | SCHWEIZER | 312,485 (Maintenance) | 945,000 |
| 1978 | MERRITT & SCHWEIZER | 358,127 (Maintenance) | 1,014,000 |
| 1979 | SCHWEIZER | 415,000 (Maintenance) | 970,000 |
| 1980 | SCHWEIZER | 438,000 (Maintenance) | 732,000 |
| 1981 | SCHWEIZER, MERRITT, & CURRITUCK | 693,080 (Maintenance) | 1,190,000 |
| 1982 | SCHWEIZER, MERRITT, & FRY | 981,217 (Maintenance) | 1,876,000 |
| 1983 | SCHWEIZER, MERRITT, FRY, & MERMENTAU | 1,034,416 (Maintenance) | 2,927,000 |
| 1984 | SCHWEIZER, MERRITT, FRY, & MERMENTAU | ------- | 4,561,000 (Projected) |

United States Department of the Interior
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

[illegible]

Honorable John H. Chafee
Chairman, Subcommittee on Environmental
  Pollution
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Senator Chafee:

Thank you for giving us the opportunity to appear before the Subcommittees on Environmental Pollution and Water Resources to testify on S. 1471.

Enclosed are the responses to the questions you requested in your letter of February 7, 1984. If we can be of further assistance on the Oregon Inlet issue, please do not hesitate to contact us.

Sincerely,

Arnett

G. Ray Arnett
Assistant Secretary for Fish and
  Wildlife and Parks

Enclosure

February 6, 1984
Senate Hearing on S. 1471

Questions to Mr. Arnett Submitted by Senator John H. Chafee for Response and Inclusion in the Record.

QUESTION #1

Q: Does the Fish and Wildlife Service have the legal authority to issue the Corps a permit to construct these jetties?

A: The National Wildlife Refuge System Administration Act permits this type of activity on a refuge if it is found to be compatible with the purposes for which the unit was established. Pea Island National Wildlife Refuge was established in 1938 for the purpose of providing a "refuge and breeding ground for migratory birds and other Wildlife." In a compatibility statement issued May 28, 1982, regarding issuance of a Department of the Interior permit for jetty construction and dredged material placement on the Refuge, the Fish and Wildlife Service concluded that the project as currently proposed is not compatible with the purpose for which the Refuge was established. The Service concluded that the proposed project would create conditions, including accelerated erosion, that would significantly alter the Refuge environment, resulting in the deterioration or elimination of wildlife habitat and certain wildlife-related public uses. Canada geese, snow geese, the black duck, gadwall, redhead, whistling swan, many types of shorebirds, and the threatened Atlantic loggerhead sea turtle would be affected by jetty construction. Species such as bluefish, seatrout, summer flounder, and blue crab would also be affected. Consequently, no right-of-way permit could be issued under existing authority by the Fish andWildlife Service to the Corps. In addition, under existing law, the National Park Service does not have the authority to permit jetty construction on the Seashore.

QUESTION #2a

Q: Given your Department's extensive involvement with this project, I am surprised your statement is less than two pages long. Could you summarize the events leading up to this hearing - What has happened and why are we here?

A: S. 1471 would authorize use of National Wildlife Refuge and National Seashore lands for construction of the jetties at Oregon Inlet. Our statement simply attempted to summarize the status of the situation relating to these Interior lands at the present time. The National Wildlife Refuge System Administration Act permits other uses of refuge lands as long as any such uses are compatible with the purposes for which the refuge was established. The Fish and Wildlife Service was unable to issue a permit for construction of a jetty, or related activities, such as jetty maintenance and sand bypassing activities, because such activities were not determined to be compatible with the purposes of the Pea Island Refuge. Futhermore, the National Park Service does not have authority to issue a permit for such uses of the National Seashore.

The Department has been involved in the consideration of the Manteo (Shallowbag) Bay Project for more than 13 years. At a meeting on April 17, 1979, with representatives from the Fish and Wildlife Service, the National Park Service, the Corps of Engineers, and the State of North Carolina in attendance, environmental questions and the need for the Corps of Engineers to secure construction right-of-way permits was discussed and delineated. At this meeting and in subsequent communications, the Department expressed concern about the potential for jetty-induced erosion on barrier islands, particularly on Pea Island National Wildlife Refuge lands.

Of major interest to the Department is the effectiveness and dependability of the proposed sand bypassing system. As long as the jetties are in place, effective sand bypassing must be performed or serious erosion problems will result. The success of the sand bypass system, as presently planned, is dependent on the survival of the dredge equipment. Working inside the surf zone, the equipment will mix trapped sand with sea water and pump it through pipes under the inlet to the eroding beach behind the opposite jetty. It is our understanding that the sand bypass dredge cannot operate in the normally moderate surf during the scheduled operation period, April through August, without the protection of the proposed semi-floating breakwater system. The breakwater system is still in the research and development stage, having yet to be deployed in any working environment that approximates conditions at Oregon Inlet.

In the event that the sand bypass system is taken out of operation by either mechanical failure or storm damage, the bypassing of littoral sands must be continued by some alternative method or serious erosion will result. We are not aware of the details of any contingency plan in such an event. We believe that the natural sand drift processes must be closely approximated and question whether that can be achieved through an annual periodic sand bypassing operation. Any deviation from the natural sand drift rates during the bypassing operation is expected to accelerate shoreline erosion and have significant impacts on those organisms that are incapable of adjusting to sudden changes in their environment.

QUESTION #2b

Q: Would you supply a copy of Interior's "Compatibility Statement" for the record?

A: See Attachment #1.

QUESTION #2c

Q. What effects would this project have on the recreation and wildlife uses of Interior's lands?

A. Based on potential and anticipated impacts associated with jetty construction, jetty maintenance and sand bypassing activities, the Fish and Wildlife Service evaluated the project's compatibility with the purpose for which Pea Island NWR was created. The results of that evaluation, summarized below, are contained in the May 28, 1982, compatibility statement that concludes the project is not compatible based on the following anticipated impacts:

- Jetties will accelerate island erosion leading to dune breaching and island overwash.
- The sand bypass system cannot be utilized during periods of high sand movement during the winter months and relies on an essential, but yet to be designed and tested, floating breakwater. Any failure to provide adequate and timely sand bypassing could produce severe beach erosion.
- Island overwash that would likely accompany accelerated erosion would eliminate natural marshes and waterfowl impoundments affecting most waterfowl species present on the island.
- The floodtide delta at the northwest tip of Pea Island is located within the Refuge Proclamation Boundary and is an important overwintering site for Canada geese. This area could be altered by the project.
- Fall and winter sand bypassing, which is predicted by coastal geological experts, could interfere with waterfowl resting and feeding.
- Disruption of the threatened loggerhead sea turtle nesting would be anticipated.
- Approximately 11.5 acres of ocean beach would be required for sand bypassing thus precluding that area from visitor use and utilization by shorebirds. This could also have a minor effect on migrating peregrine falcons, an endangered species.
- Sand bypassing could seriously deplete nearshore fishery resources thereby reducing recreational fishing along the 2,000- to 14,000-foot stretch of "feeder beach" required for sand bypassing.
- During the 3-year construction period, Refuge and National Park lands immediately adjacent to the inlet will be closed to all visitor use.

Impacts of proposed jetty construction on the Cape Hatteras National Seashore include:

- Anticipated use of approximately 120 acres of land for construction at the north anchor jetty based on plans from the Corps of Engineers;
- Disruption of activity at the Oregon Inlet Fishing Center during construction; and
- Required relocation of the Oregon Inlet Campground comprised of 120 campsites occupying approximately 35 to 45 acres.

QUESTION #2d

Q. What effects does the dredging have?

A. The environmental impacts of dredging alone in an area such as Oregon Inlet are not significant. Inlet bottom conditions are characterized by coarse shifting sands and strong currents which make them unsuitable for colonization by all but a few specialized organisms. Likewise, the swift inlet currents do not allow fine sediments to be deposited in the inlet. Consequently, inlet dredging is a relatively clean and impact free operation that is routinely performed in all navigable oceanic inlets in North Carolina. However, dredging can disrupt the longshore movement of sand across an inlet causing erosion of downdrift beach-front lands and accelerated erosion of lands in the vicinity of the inlet. The hopper dredging that occurred at Oregon Inlet during the months of September-December 1983 has caused no apparent increase in erosion, however, the Corps estimates that Oregon Inlet will migrate approximately 3 miles over the next 16 years with continued hopper dredge maintenance. Dredging induced erosion may be lessened or eliminated by redepositing dredged materials in the littoral zone and by reducing the volume of materials removed. Dredged material deposition in the littoral zone was attempted during the fall, 1983 dredging; however, we are not aware of the effect of this effort since we have not been able to review the results of beach profile studies being performed by the Corps. Similarly, we have not seen the results of the Corps' reanalysis of the comparative differences between a 14-foot dredging program, the authorized jetty project that calls for a 20-foot channel and the dredging only alternative, that also envisions a 20-foot channel depth. This comparison is called for in the 1983 Energy and Water Development Appropriation Bill (Report No. 97-673). When completed, this reanalysis, which is to be prepared "in light of new information," may provide additional knowledge on the effects of the various dredging schemes.

QUESTION #3

Q. If I remember correctly, this area we are discussing would have been covered by the Coastal Barrier Resources Act of 1982 and protected from harmful projects such as this but for the fact that it is already protected as National Seashore and Refuge lands. Is that correct?

A. If this area had not already been under Department of the Interior jurisdiction, it would have been considered for inclusion in the Department's inventory of undeveloped coastal barriers as required by the Omnibus Budget Reconciliation Act of 1981. As you know, this inventory served as a basis for Congressional designation of the Coastal Barrier Resources System protected by the Coastal Barrier Resources Act of 1982.

QUESTION #4a

Q. What has Interior recommended as an alternative to building the jetties?

A. The Department of the Interior has consistently supported the maintenance of a safe, navigable channel through Oregon Inlet. On August 26, 1981, the Department submitted to Assistant Secretary of Civil Works Gianelli an alternative to jetty construction that calls for the construction of a 20-foot deep, 400-foot wide channel through the inlet (Attachment 2). This alternative to jetty construction was a phased dredging approach. It was proposed to begin in the fall of 1981, and using a small hopper dredge, several dredging techniques would be tested: (1) to determine the best location for the channel with regard to operation and maintenance; and (2) to assess the best methodology for assuring that dredged materials are returned to the littoral zone, thus minimizing beach erosion. The Corps in a January 1983 report concluded that this alternative was infeasible.

However, in the fall of 1983, the Corps essentially performed channel maintenance as called for in Phase II of our recommended alternative when the hopper dredge "Mermentau" was deployed at the inlet. The success of the "Mermentau" can be seen by reviewing monthly channel survey data the Corps collects and maintains. In brief, it appears that the "Mermentau" has provided the deepest and widest channel so far available during the critical winter months when fishing activity peaks at Oregon Inlet.

QUESTION #4b

Q. How is your "dredging only" proposal different from what the Corps has been doing for years?

A. The initial channel excavation at Oregon Inlet was performed in 1960 using the hopper dredge "Hyde". Subsequent maintenance through 1971 was also accomplished by the "Hyde" with assistance in pilot channel development being provided by sidecast dredges during the period 1964-1971. The "Hyde" has a pumping capacity of approximately 500 cy/hr. Between 1971 and September 1983, the Corps maintained the navigation channel at Oregon Inlet by use of small sidecast dredges which removed material from the channel and cast it aside via a long pipe mounted on the dredge. The pumping capacity of these small dredges is approximately 450-650 cy/hr. Working alone, these sidecast dredges are relatively ineffective as evidenced by the fact that since 1971 the authorized channel depth of 14 feet has been attained only about 25 percent of the time and the authorized 400-foot wide dimension has never been reached.

The Department of the Interior's alternative called for a phased approach to channel maintenance that, during Phase II of the work, utilized an "Atchafalaya/Mermentau" class dredge. As with the jetty alternative, the Department's alternative aims to provide a channel 400-foot wide by 20-foot deep. The "Mermentau," which was used this past fall to create a new navigation channel through the inlet, has a pumping capacity of 1,300 cy/hr. Accordingly, the principal difference between the Department's proposal and past Corps activities is: (1) the use of a large hopper that removes large volumes of sediments from the channel and inlet instead of casting materials to either side of the channel as occurs with the sidecast dredge; and (2) deposition of the dredged material in the nearshore zone where it can reenter the littoral system and replenish downdrift beaches.

QUESTION #4c

Q. Didn't the Corps' January 1983 report and feasibility study find a "dredging only" proposal infeasible?

A. Yes. The 1983 Corps study concludes that an inlet channel having a project low-water depth of 20 feet and a width of 400 feet could, under average wave conditions, be maintained by a split-hull, trailer suction hopper dredge of the "Atchafalaya/Mermentau" class. With average conditions, the dredging/disposal operations would have to be performed on a continuous year-round basis with the total annual dredging volume amounting to approximately 1.45 million cubic yards, according to the report. In addition to year-round dredging, the report asserts that ". . . the destruction of the northernmost 3 miles of Pea Island would . . . occur in less than 16 years if the natural erosion (rate) were to be exacerbated by the dredging/disposal scheme . . . ."

Based on these considerations, the Corps recommended that no further considerations be given to the dredging only alternative. Recent employment of the hopper dredge "Mermentau" at Oregon Inlet has given us some additional information to use in evaluating this alternative. However, to our knowledge, the Corps has no plans to undertake an operational test of the dredging alternative.

QUESTION #5a

Q. I have several technical questions regarding this bill. Who will administer the project lands?

A. The bill is unclear as to which Federal or non-Federal entity would have jurisdiction over the lands to be used for the jetty project and the structures placed on them. While the Secretary of the Army may be granted the authority to use Seashore and Refuge lands, it is not clear whether these lands remain under the jurisdiction of the Secretary of the Interior. For example, is this a permanent transfer to the Corps or a lease arrangement? This could affect such areas as law enforcement, tort claim, and public safety.

QUESTION #5b

Q. What are the provisions for mitigation?

A. S.1471 includes no provision for mitigation of the physical loss of lands to jetty construction and dredged material disposal, for fish and wildlife habitat losses or for the disruption of recreational use and wildlife management activities.

QUESTION #5c

Q. Who will pay for things such as moving the campground?

A. Normally, it would be part of the construction cost, in this case to be borne by the Corps. However, the bill does not specify who is responsible for such costs.

QUESTION #5d

Q. Should these matters be specified in legislation of this type?

A. In general, if these types of items were specified in the legislation, potential future delays caused by questions on these issues would be minimized.

QUESTION #5e

Q. Do you have any technical comments on the bill?

A: The Administration has taken no position on this legislation; we are therefore unable to provide technical comments at this time.

QUESTION #6a

Q. Mr. Arnett, your statement and Mr. Vallianos' statement tell us that the Administration "does not now have a position" on this legislation. Didn't Secretary Watt state in a letter dated June 22, 1983, to Senator Helms that he "could not offer support for such legislation in light of the Department's determination that the jetty proposal would negatively impact the Seashore and the Refuge"?

A. That is correct. However, former Secretary Watt did not say we would oppose this type of legislation. At that time, as now, we can neither support nor oppose this legislation because the Administraion's analysis is not yet complete. The supplemental EIS, feature design memorandum and economic analysis are still under preparation.

QUESTION #6b

Q. Given the cost of this project and the adverse environmental consequences, is the Administration seriously considering a position of "support" for this legislation?

A. Until all the studies are completed, more details on placement of the jetties and operation of the sand bypass system, and an adequate economic study is finalized, no position can be taken.

QUESTION #6c

Q. At the very least, before we approve legislation such as this, shouldn't we wait for the revised economic analysis as well as more experience with the split-hulled hopper dredge alternative?

A. The Administration will defer taking a position on this legislation until all studies are completed and a revised economic analysis is completed.

The hopper dredging that took place during the fall was strictly an attempt to open up the channel. To our knowledge, the Corps has no plans to undertake operational testing of the "dredge-only" alternative.

## Questions on S. 1471 submitted by Senator Stafford

### QUESTION #1

As I understand the Corps' project, its success depends upon dredging and the "bypassing" of that sand to areas where erosion has occurred.

Q. In seas of what height can this "bypass" dredge operate safely?

A. I will have to defer to the Corps on this question.

Q. What is the variation in the height of the seas off Oregon Inlet during the summer? In the winter?

A. Again, I will have to defer to the Corps.

Q. Has the breakwater to protect the dredge been designed?

A. We understand that the breakwater is currently being designed, but to the best of our knowledge it has yet to be deployed in any working environment that closely approximates conditions at Oregon Inlet.

Q. How long will it take to remove the breakwater in the event of a sudden storm, and move the dredge to safety?

A. I must defer to the Corps.

Q. To what degree can the location of winter storm erosion be forecast during the preceding summer when dredging is to occur?

A. I must defer to the Corps.

Q. What is the cost of this maintenance program, compared with the existing maintenance program for the inlet?

A. Again, I must defer to the Corps.

### QUESTION #2

Q. A hopper dredge has been used on the inlet in the last year or so. How effective has it been in keeping the channel open? Why can't it do the job in the future?

A. That use of the hopper dredge was to open the channel. Before the hopper dredge was taken off the project and moved elsewhere, the channel reached near authorized dimensions. To our knowledge, no sustained attempt will be made to keep the channel open using a hopper.

QUESTION #3

Q. This area, I gather, is relatively limited in the amount of sand available. Whatever protection to the coast is needed must come from the sand that is now there. To what degree will sand accumulate at the mouth of the jetty, and thus not be available for replenishing the beaches?

A. I must defer to the Corps.

QUESTION #4

Q. Will there be shoaling in the inlet after the completion of the jetties? To what degree?

A. Again, I must defer to the Corps.

QUESTION #5

Q. Let us assume a hurricane were to strike the area. Let us also assume the jetties are built. What is likely to occur with the water buildup in the Sound? Will that water breach the barrier reef at another location? If it did, what would happen?

A. That is a possibility we are concerned about, especially in relation to Pea Island National Wildlife Refuge. If it did happen, it could greatly affect management of the Refuge.

QUESTION #6

Q. How long has the fish processing plant been operating? Who built it? To what degree was it built with Federal support?

A. To my knowledge, no new fish processing plants have opened since the expansion of the Wanchese Industrial Seafood Park in 1980. I have no knowledge as to degree of Federal support.

## QUESTIONS FOR MR. ARNETT FROM SENATOR ABDNOR

### QUESTION #1

Q: Are the fishing grounds accessible by commercial fishermen via Oregon Inlet any more productive than those that can be reached from other points along the Atlantic Coast?

A: On a seasonal basis, certain species are more available off Oregon Inlet than off other ports. However, in responding to this question, it is important to distinguish between traditional pelagic and bottom fisheries and the non-traditional fishery for such species as squid. The traditional fishery to which Wanchese has a competitive accessibility advantage is that resource that lies within the relatively narrow reach of ocean located between Wanchese and the port at Hampton Roads, Virginia to the north and the port at Morehead City, North Carolina to the south. Fishing grounds off Oregon Inlet are more productive only during the fall and winter seasons. During fall and winter, declining temperatures cause many commercially important traditional species such as flounder, sea bass, porgy, weakfish and occasionally croaker to migrate southward.

Because the area offshore of Oregon Inlet, and in the vicinity of Cape Hatteras, is a point at which cold coastal currents from the north and the south-flowing Gulf Stream meet, it is a natural point of concentration for southward-migrating species. During the spring and summer, other Atlantic Coast fishing grounds are of equal or greater value. With regard to the non-traditional fishery, each Atlantic Coast port would have a geographic advantage during certain seasons of the year as the commercial fishery for squid and herring ranges from north to south. The Wanchese location is at the extreme southern edge of both the squid and herring fishing grounds. Consequently, the competitive advantage of this port could be relatively brief. This question would appropriately be addressed to the National Marine Fisheries Service (NMFS).

### QUESTION #2

Q: Are fishing grounds reachable from Oregon Inlet being fished to their capacity now? If not, what is their capacity with respect to different commercial fish species?

A: Biomass estimates or other objective estimates of fish stock abundance for Atlantic Coast Fisheries, including fishing grounds off Oregon Inlet, are not available. It appears that initiation of extended jurisdiction by the United States has reduced the catch of some species by foreign vessels and, in effect, has created an underutilized capacity within some fisheries. Available capacity is difficult to assess in the absence of stock abundance estimates but potentially is greatest for those species not traditionally consumed in the United States, such as long- and short-finned squid, red and silve hake, sea herring and butterfish, among others. Again, this question might best be answered by NMFS.

QUESTION #3

Q: Some proponents of the jetty project have claimed that the jetties themselves would serve as good habitat and perhaps even enhance sport fishing in the area. Please comment on this assertion.

A: The Department of the Interior concurs with the position that the jetties will provide rocky shoreline habitat for fishes and invertebrates. Generally, such habitat will support higher biological production than sandy, unstable habitat. We believe that the jetties will be colonized by a complex assemblage of marine organisms which will, in turn, attract fishes in a manner which is comparable to artificial reefs. The effect of the jetties on sport fishing is considerably less certain. Assuming that the jetties are constructed in a fashion that allows both fisherman access and a reasonable retrieval rate of fishing tackle being reeled in over the toe of the jetty, no net loss of fisherman utilization of the inlet shoreline would be anticipated. Under these conditions, increased utilization may occur, but, the magnitude of any increased utilization cannot be predicted without further study and additional design information. An increase in recreational boating and fishing may result from jetty construction. This predicted increase is expected to be relatively small, however, and is based on an influx of fisherman from other areas rather than new investments. The influx of additional fishermen will be dominated by those who seek the opportunity to catch secies such as sheephead and black sea bass which may be attracted to the jetties. A major influx of boating fishermen is not anticipated since the inlet, in its present form, is widely recognized as an excellent site for recreational fishing.

QUESTION #4

Q: Is it true that the Pea Island National Wildlife Refuge is presently eroding at an average rate of about seven feet each year over a large area? If this is true, what do projections show about the shoreline of the Refuge for the next 20 or 30 years?

A: The U.S. Army Corps of Engineers Phase II General Design Memorandum (GDM) identified an 18,000 lineal foot segment of Pea island, fronting the waterfowl impoundments, as eroding at a rate of -7.4 ft/yr between 1965-1975. Using these projections, the Corps stated in 1977 in their Phase I GDM that N.C. Highway 12 would be cut at two sites in about 25 to 30 years. That report goes on to state that ". . . unless measures are taken to halt the erosion, these existing facilities will have to be abandoned and/or relocated within the very near future, probably within a period of 10 years." This latter prediction takes into account the probability of a major storm striking the area and causing abrupt shoreline changes.

Attachment #1

# COMPATIBILITY STATEMENT REGARDING ISSUANCE OF A DEPARTMENT OF THE INTERIOR PERMIT TO CONSTRUCT JETTIES AND PLACE DREDGED SPOIL ON PEA ISLAND NATIONAL WILDLIFE REFUGE

## I. Introduction

This document is a compatibility statement/assessment regarding the issuance of a Department of the Interior permit to the U. S. Corps of Engineers for the purpose of constructing a jetty and placing dredge spoil on Pea Island National Wildlife Refuge. The project is known as the Manteo (Shallowbag) Bay Project. The authority for granting rights-of-way permits and/or easements is found in the National Wildlife Refuge System Administration Act (16 U.S.C. 668 dd (d)). It authorizes the Secretary of the Interior to "permit the use of, or grant easements in, over, across, upon, through or under any areas within the system for purposes such as but not necessarily limited to, powerlines, telephone lines, canals, ditches, pipelines, and roads, including the construction, operation, and maintenance thereof, wherever he determines that such uses are compatible with the purposes for which these areas are established."

## II. Project Purposes

The project was authorized to improve the navigability of existing channels and to provide safe passage from the Atlantic Ocean through Oregon Inlet to Roanoke Sound. In doing so, vessel operating costs will be reduced, there will be a reduction in vessel delays, vessel damages will be minimized, there will be increased seafood landings, and there will be easy access to a harbor.

## III. Project Description (Plate I)

Project elements involve actions on and off refuge lands. For the purposes of this document, only the elements directly affecting the refuge will be discussed. The Corps has made substantial changes in the design of the jetty system. This section reflects all the changes received to date. However, other changes such as land requirements will probably occur at a later date.

The project involves the construction of two rubble mound or concrete armor jetties at Oregon Inlet and a sand bypass system that would require periodic placement of dredge material on the refuge. The north jetty would be approximately 6,850 feet in length and would be partially situated on lands administered by the National Park Service. The south jetty would have a total length of 6,400 feet with the shorewardmost 2,300 feet connected to Pea Island National Wildlife Refuge, which is administered by the U.S. Fish and Wildlife Service. The south jetty would permanently occupy 4.4 acres of refuge lands. Jetty construction would occur over a 38-month period with construction of the south jetty occurring first. Approximately 457,000 cubic yards of sand will be removed from the Inlet during the initial stages and placed on the refuge. During construction and in subsequent years, approximately 41 acres of refuge land would be required for such purposes as sand bypassing, storage and access areas, and pipeline rights-of-way. (The pipeline right-of-way along Highway 12 is under jurisdiction of the refuge. Therefore, seven additional acres would be included in the permit request.)

An integral project feature would be the periodic bypassing of sand around or over the jetties. This activity would include annually pumping approximately 531,000 cubic yards of sand from the accretion fillet behind the north jetty onto the refuge beach. It is anticipated that the bypass operation would take place during the months of May through August. The feeder beach limits on the refuge would be located between 2,000 and 14,000 feet south of the south jetty. The feeder beach will be 5,000 feet long with 100 feet located above the high water mark. The feeder beach will encompass 11.5 acres of existing beach face. The pipeline would be placed along Highway 12 and cross the dunes at various points for access to the beach. Booster pumps would be required due to the length of the pipeline. Sand bypass to the north would rarely occur. However, when bypassing to the north is required, a floating dredge would enter the accretion fillet at the north end of the refuge and pump the accumulated sand to the feeder beach between 2,000 and 18,000 feet north of the north jetty.

## IV. Environmental Consequences (Plate II)

The Pea Island NWR was established in 1938 as a "refuge and breeding ground for migratory birds and other wildlife," Executive Order 7864 (April 12, 1938). In making a determination as to whether the project is "compatible" with this purpose, the FWS examines the impacts and benefits of the project on the functions of the refuge which implement this purpose, e.g., habitat for migratory birds and other wildlife, including endangered or threatened species. In addition, FWS will examine any effect of the project on objectives of the refuge, including environmental education, wildlife interpretation and wildlife-oriented recreation.

The concerns of the U.S. Fish and Wildlife Service are based upon the current environmental conditions at Oregon Inlet and the predicted changes in this dynamic area as a result of the jetty project. The Fish and Wildlife Service had to rely on the expertise of coastal scientists to formulate the basic barrier island changes that would probably occur during the life of the project. The effects of these changes were then projected to identify their full impacts on refuge objectives.

### INMAN GROUP POSITION

In 1979, a team of coastal experts retained by the National Park Service convened at Oregon Inlet to review the proposed plans for stabilization. The team included Dr. Douglas Inman, Scripps Institution of Oceanography; Dr. John Kraft, University of Delaware; Dr. Robert Dalrymple, University of Delaware; and Dr. Robert Dolan, University of Virginia. They reviewed the past and current conditions of the Inlet, its relationship to the barrier islands and evaluated the potential impacts of the jetty project.

The current conditions of the Inlet and barrier island system included the following:

a. The barrier islands are migrating toward the mainland by storm overwash and inlet formation and closure. However, the process has stabilized temporarily due to past efforts to build dunes. Estimates of migration are as high as 30 feet/year in some areas near the Inlet although the average is 6-10 feet/year.

b. There is littoral transport of sand along the beaches caused by waves and currents. Sand transport is estimated to be 1,000,000 cubic yards per year to the south and 500,000 cubic yards per year to the north.

c. Sand transport follows three paths 1) flows along the outer edges of the ebb tide delta, 2) flows into the flood tide delta and back out to the ebb tide delta, 3) progressive accretion on the updrift side of the Inlet and erosion of the downdrift side.

d. The Inlet is very dynamic and is migrating south at a rate of 75 feet/year. It has moved over 9,000 feet southward since the Inlet first opened in 1846.

e. Significant erosion is currently occurring on most of Pea Island National Wildlife Refuge. Over 250' has been lost off the north end of the island within the past year.

f. During severe storms the Inlet acts as a safety valve to release the water built up by storm tides, rainfall, and runoff.

After review of the proposed project, the group formulated their view of the potential implications as they perceived them. The implications included:

a. The jetties will probably accelerate already high erosion rates. Pea Island for 2 to 5 miles south will undergo rapid beach and dune erosion, dune breaching, overwash, and associated flooding. It would require a very efficient sand bypass scheme, preferably a continuous bypassing scheme, to prevent negative impacts. They did not believe that periodic sand bypass a few months each year will be sufficient.

b. The ebb and flood tide deltas will be altered, relocated or eliminated due to the jettying effect of the tide flow.

c. The probability of new inlet breakthroughs especially in the areas just north and south of the Inlet will increase. This would be due to storm surge and the inability of the Inlet to release this pressure.

The Inman Group has followed the project proposal through the review process. Their current position is that regardless of continued reassurances from the Corps of Engineers, to the opposite, the Oregon Inlet jetties will have significant impacts on the shorezone processes, specifically, land areas adjacent to the Inlet. Modification of the natural sand transport processes will accelerate already high erosion rates along Pea Island.

## CORPS OF ENGINEERS POSITION

The Corps of Engineers has reviewed all comments, gathered additional data and formulated their position. On some points they agree with the Inman Group and others they disagree.

a. In their design memorandum, the Corp of Engineers indicates that barrier island migration that occurred to Hatteras Island between 1852 and 1946 do not support the generalized theory of barrier island migration. Furthermore, if barrier islands are migrating, they must be doing so on a time scale different than that associated with the life of a major engineering project. It is concluded, by the Corps, that barrier island migration is not a significant or even relevant phenomenon in terms of its impact on the proposed jetties. However, in other documents the Corps makes statements such as "The basic geologic sequence is a transgressive Holocene barrier migrating over a Late Pleistocene lagoonal - back barrier sequence on a geologic time frame. This migration is indicated by both the exposures of Holocene salt and freshwater marsh peats on the beach front on Pea Island...".

   Their view is that the barrier islands are not migrating but that they are experiencing erosion on both the sound and ocean shorelines due primarily to rising sea level.

b. The Corps' position on littoral transport closely parallels the Inman Group. Their studies indicate just south of the Inlet, southerly sand movement was estimated to be 1,259,000 cu. yds/year, and northerly transport was 728,000 cu. yds/year, which results in a net transport of 531,000 cu. yds/year to the south.

c. The Corps further agrees that the Inlet is migrating generally southward. Since its opening in 1846 the Inlet channel has migrated 9,000 feet.

d. The Corps further agrees that severe erosion on Pea Island is occurring. Their data indicates that the shoreline change rate immediately south of the Inlet is 7 feet/year. The high erosion is occurring on the first three miles of beach and along the sound side shoreline near the Inlet. It has increased recently due to channel realignment to the southwest - northeast.

e. The Corps design memorandum concurs in the view that jetties will alter the longshore drift of sand. They also stated that in order for the project to be successful, that an efficient sand bypass scheme had to be implemented. Without sand bypass the serious erosion problem on Pea Island would accelerate and become even more of a problem.

> FWS Note: The sand bypass scheme proposal by the Corps includes a sand bypass dredge and a portable breakwater system. The sand bypass dredge cannot operate in the normally moderate surf during the scheduled operation period without the protection of the semi-floating breakwater system. The problem is that the breakwater system is still in the research and development stage, having yet to be deployed in any working environment. In the event the sand bypass scheme fails due to mechanical failure or storm damage, no alternate method for sand bypass is prepared.

f. The Corps states that during and immediately following construction of the jetties, the shoreline and nearshore bottom will undergo rather radical changes. These changes will be primarily associated with the sediments contained in the ebb tide delta. The changes include a movement of sediments behind both jetties and erosion of additional sediments between the jetties. The flow will be somewhat confined through the Inlet and should result in a considerable amount of scour. The Corps further states that only 20,000 cubic yards of sand are added to the flood tide delta each year. This excludes the vast expanse of tidal flats and marsh created as the Inlet moves southerly. The Corps contends minor or no impacts on the flood tide delta.

g. The Corps stated that based on the results obtained in the functional model, the jetties would not increase the potential for breakthroughs or Inlet formations along this barrier island group. However, they indicate they are studying this further. One of the most recent design changes included widening the distance between the jetties from 2,500 feet to 5,000 feet.

The basic position of the Corps is that all of the objectives of the project will be met with the proposed design. In addition, they feel that the beach along Pea Island will suffer no ill effects from the project.

## FISH AND WILDLIFE SERVICE POSITION

Thus far, the discussion has focused on barrier island dynamics and the predictable geologic impacts of the proposed project. There is no doubt that these impacts will influence the determination of compatibility. Of special concern to the Fish and Wildlife Service are the irreversible impacts that would be produced by an inadequate sand bypass system.

It is at this juncture that the environmental consequences of the project are related to the purposes for which the refuge was established, i.e., habitat for migratory birds and other wildlife and the educational and recreational objectives of its management.

To Provide Wintering Habitat for Migratory Birds.

As documented earlier, shoreline erosion is currently occurring along the sound and ocean sides of the island. Corps documents indicate a loss of marsh habitat due to this erosion. This marsh habitat is critical to the overwintering of 8,000 snow geese each year. It is used for feeding, loafing, and roosting. According to the Inman Group, the jetties will probably accelerate the rate of beach erosion. If erosion is accelerated and prolonged overwash from the ocean side begins, then much of this marsh will be inundated with sediment. The short term (10 years) impacts could be a lack of habitat to overwinter up to 50% of the snow goose population. It is possible over the long term (20-30 years) that new marsh will be created as this sediment reaches the sound side and provides a substrate for marsh development. There is no way to predict the severity with any degree of certainty.

The beach zone immediately in front of the three managed refuge impoundments is experiencing some of the most severe erosion along the entire barrier island. Any actions that accelerate this erosion process would be directly responsible for overwash of this section in the not too distant future. Overwash in this area would greatly alter this 1,000 acres of intensively managed waterfowl and migratory bird habitat. These impoundments play an integral role in the overall waterfowl utilization of the refuge. Northeast winds cause the waterfowl to use the shallow calm waters of Pamlico Sound for feeding and loafing. Southwest winds bring the waterfowl back to the impoundments for shelter and food. Approximately 20% of the total refuge waterfowl use occurs in the impoundments. Since the impoundments are critical to the total waterfowl use picture at Pea Island, it is logical to project that the loss of the impoundments could result in significant waterfowl use losses.

Another concern along the impoundment area is that any increase in erosion and overwash would likely cause the highway department to want to relocate Highway 12 further into the area around the impoundments since the frontal dune separating the ocean and the highway currently affords little protection. Highway relocation occurred in 1962, resulting in encroachment into the waterfowl impoundments, thus destroying several acres of prime waterfowl habitat.

The flood tide delta located within the Refuge Proclamation Boundary and immediately adjacent to the land mass of the refuge is important to the overwintering of Canada geese and other waterfowl. The area is extensively used for loafing and feeding. There is special concern for the Canada goose in North Carolina due to declining numbers. However, this flock seems to be remaining constant and even slightly increasing over the past few years. The delta and the associated shoals provide excellent shoal and eel grass beds which are the primary feeding sites for these birds. The flock is estimated to be 5,000 geese. The Inman Group and the Corps believe the proposed project will alter or reduce this vast shallow delta through scouring of sand by changing currents and a lack of replenishment due to the jetty structure. This would result in a decline in the amount of habitat available to the geese during the winter months. Goose use in this would be significantly reduced by the alteration and deterioration of this habitat. This reduction could be as high as 30% to 50%. Since goose hunters north of the refuge utilize this flock, hunters success would also be effected significantly.

A nine acre natural pond exists in the marsh on the north end of the refuge in close proximity to the proposed project. This pond has the distinction of attracting both puddle ducks and diving ducks in one small area. During the three-year construction phase all waterfowl use will be essentially eliminated from the pond. Construction activity will be so close that the revetment wall of the jetty will be located on the edge of the pond. Periodic maintenance activities and the presence of the jetties are projected to have continued adverse effects on the pond over the entire 50-year life of the project. Up to 500 ducks and swans currently use the pond.

If for some reason sand bypass contin3es into the fall and winter (this is suggested and preferred by coastal scientists), then adverse impacts will be realized on a small flock of 300 snow geese. These geese feed on native vegetation in the dunes and rest on the beach. Sand bypassing activities during any period of time when the snow geese are present would eliminate their use on approximately three miles of beach and dunes.

## To Provide Habitat for Other Wildlife.

The beach and dunes provide nesting areas for willets, oystercatchers, black skimmers, least terns, and gadwall ducks. In previous years an estimated 300 willets, 50 oystercatchers, 40 black skimmers, 100 least terns, and 200 gadwall ducks were produced in the beach/dune zone. Sand bypassing during the spring and summer will eliminate nesting in the 11.5 acre bypassing zone. In addition, if the erosion rate accelerates south of the bypass area as predicted by the coastal specialists, adequate nesting sites along that stretch of beach could be eliminated.

During the fall, winter, and spring thousands of shorebirds, gulls, and cormorants loaf and feed on the flood tide delta. Cormorants are the most noticeable species due to their size and method of congregating. The most abundant gull species is the ring-billed gull with the herring and black-backed gulls in lesser numbers. Shorebirds including willets, plovers, and dowitchers probe for organisms in the sand. Over 5 million water and shore bird use days are recorded for the refuge each year. The primary concern is again alteration of this flood tide delta resulting in fewer benthic organisms that the birds feed on, and less area available for loafing. The percentage reduction in use-days by migratory birds due to this alteration is difficult to predict, but could result in a substantial decline.

Invertebrates of the beach and surf zone, particularly the mole and ghost crabs, and coquina clam, will be eliminated over much of the sand bypass zone. The mole crab and coquina clam depend largely on larvae recruitment to recolonize former habitats. It is estimated that complete recolonization may require one to two seasons along beaches which have been spoiled upon. Water turbidity will increase as far out as 3,000 feet from shore. Because of the expected annual frequency of bypassing sand, it is probable that beaches along the 14,000 feet of feeder beach will be seriously depleted of normal intertidal zone invertebrates and of predatory fishes such as spot, bluefish, flounder, Florida pompano, trout and king fish that feed on these organisms.

## To Provide Habitat for Endangered and Threatened Species.

On April 8, 1980 the Fish and Wildlife Service rendered the finding of "no jeopardy" concerning the proposal's impacts on the continued existence of the loggerhead sea turtle. This determination was based on the fact that the refuge beach is on the northern extremes of the nesting range and does not contribute significantly to the overall population. However, on the Outer Banks more sea turtle nesting occurs on the refuge beach than any other area. The importance of this nesting habitat is further enhanced by the fact that turtle nests (eggs) located in hazardous areas along beaches off the refuge are relocated, incubated, and young released on refuge beaches. Since 1972 over 8,000 young hatchlings have been released to the ocean refuge beaches. The sand bypass operation with its associated heavy equipment movement, pumping, and deposition of large quantities of sediments will eliminate any turtle nesting in the sand bypass zone.

The endangered peregrine falcon population that migrates through the refuge in the fall will likely be impacted by the sand bypass operation. Deposition of sand on the feeder beach is supposed to occur during periods of low wave energy to allow for accumulation and development of a stockpile. The sand is to disperse later in the year during the high wave energy episodes. The feeder beach area is approximately 11.5 acres in size and must accommodate 531,000 cubic yards of sand. Unless the feeder is expanded seaward, the average depth of deposited sand will be over 25 feet. This depth of sand will preclude the use of the bypass zone by benthic organisms. Lack of these organisms in this area will eliminate shorebird use since this is their main source of food. Shorebirds are a significant part of the diet of the falcons as they migrate along the Outer Banks.

As previously discussed, the flood tide delta is an important feeding and loafing site for migratory birds. Brown pelicans, another endangered species, use the exposed sand shoals of the delta as loafing sites especially in summer and fall. If the delta is scoured by changing currents as predicted, then changes in their use of this area will occur.

## To Provide Opportunities for Environmental Education, Interpretation, and Wildlife-Oriented Recreation.

The annual sand bypass operations will eliminate public use in all or part of the 2,000 to 14,000 feet feeder beach during the pumping period. This amounts to between 50,000 and 100,000 visits. Even when sand is not being pumped, a significant drop in historical use of this stretch of beach can be expected.

The potential for increased erosion due to the lack of an efficient sand bypass system will influence the planning, construction and operation of any public use facilities. Facilities such as adequate parking for beach access will go lacking. Visitor contact points will be delayed or never built. The influence of the project even in the proposal stage is already apparent.

## V. Consultation/Coordination

The offices of the U.S. Fish and Wildlife Service, Division of Ecological Services, Raleigh, North Carolina; National Park Service, Cape Hatteras National Seashore, Manteo, North Carolina; and U.S. Corps of Engineers, Wilmington District, Wilmington, North Carolina, were consulted in the preparation of this document.

## VI. Compatibility/Noncompatibility

Based on a review of the scope of work of the proposal and its short and long term impacts, it is determined by the U. S. Fish and Wildlife Service that the proposed project is not compatible with the purpose for which Pea Island National Wildlife Refuge was established. The primary reason for this finding of incompatibility is our assessment that the proposed project will create conditions that will significantly alter the refuge environment, resulting in deterioration or elimination of wildlife habitat, and certain wildlife related public uses.

Fish and Wildlife Service personnel agree with the conclusions of the Inman Group that beach erosion will be accelerated by construction of the jetties. Any actions or activities which increase the current erosion rate on the Pea Island beaches would be contrary to the best interest of the refuge and would be incompatible with the purposes for which the refuge was established. Our assessment is that these detrimental effects will take place even if the Corps is able to carry out the project as planned. We continue to have the same concerns that the Inman Group has; however, that the Corps has not provided any conclusive evidence that they can develop and implement an adequate sand bypass system. Since this is an essential component of the project, a failure of this system to operate as planned would result in the deterioration of wildlife habitat of a magnitude greatly exceeding that which can be expected if the system operates as the Corps plans.

James W. Pulliam Jr.
Regional Director
U. S. Fish and Wildlife Service
Atlanta, Georgia
5-28-1982

Plate I

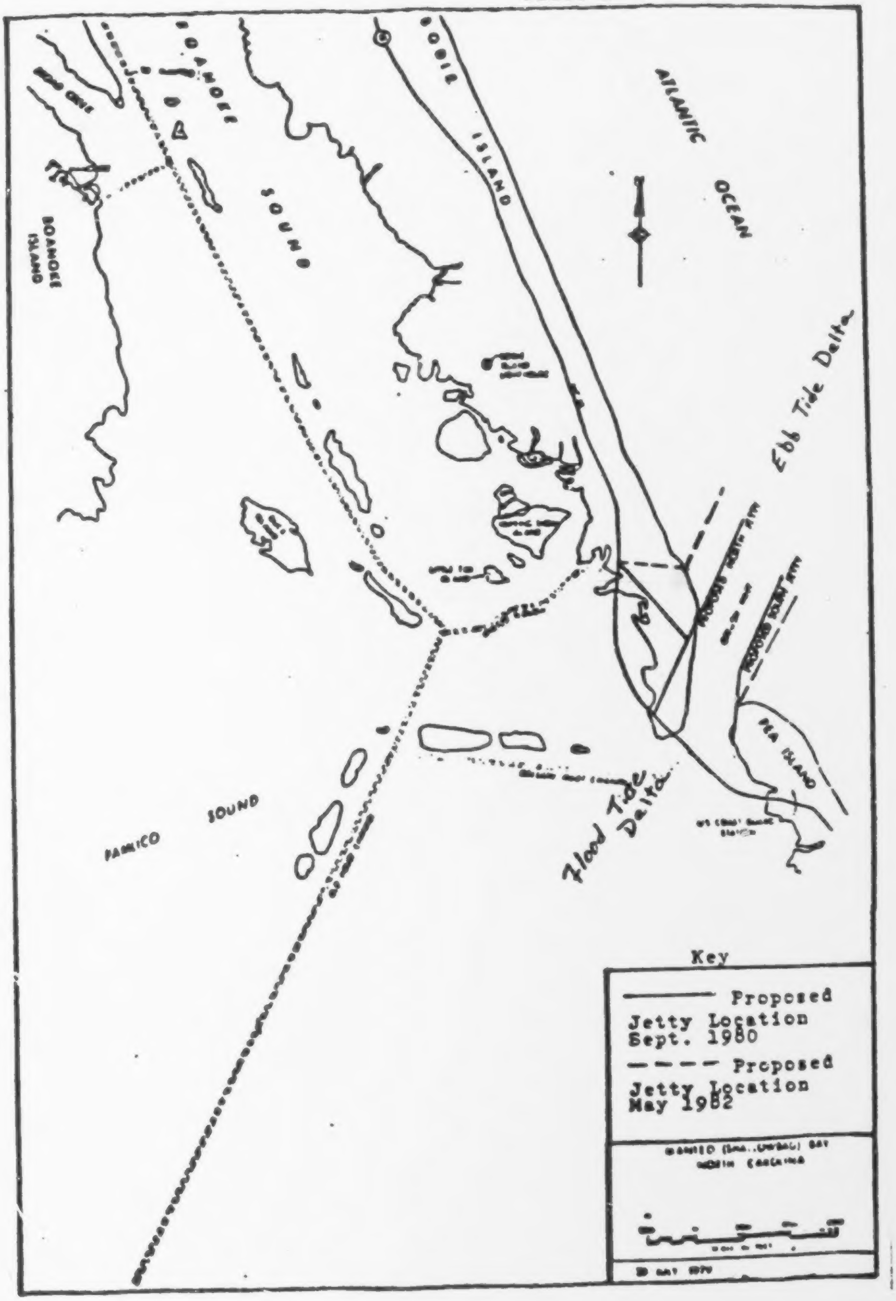
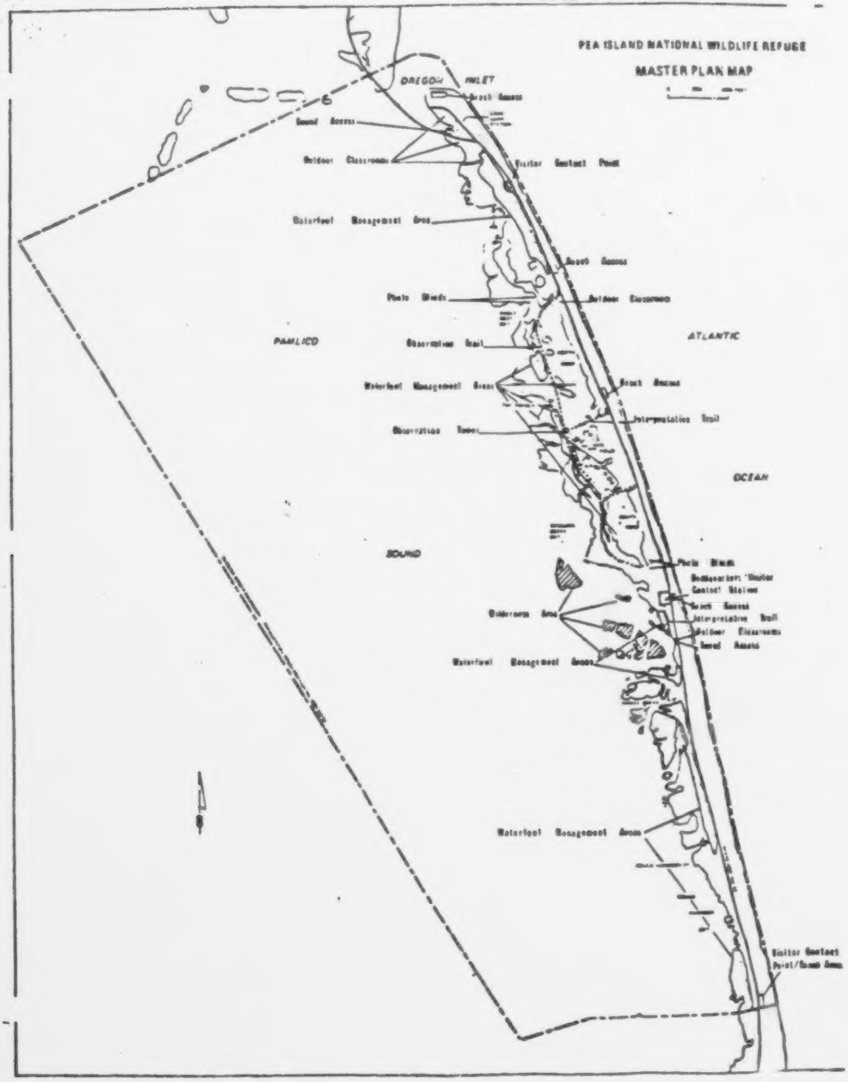

ROANOKE SOUND
BODIE ISLAND
ATLANTIC OCEAN
ROANOKE ISLAND
Ebb Tide Delta
PEA ISLAND
Flood Tide Delta
PAMICO SOUND
Key
Proposed Jetty Location Sept. 1980
Proposed Jetty Location May 1982
MANTEO (SHALLOWBAG) BAY
NORTH CAROLINA

Plate II


PEA ISLAND NATIONAL WILDLIFE REFUGE
MASTER PLAN MAP
OREGON INLET
Beach Access
Sound Access
Outdoor Classrooms
Visitor Contact Point
Waterfowl Management Area
Beach Access
Photo Blinds
Outdoor Classroom
PAMLICO
ATLANTIC
Observation Trail
Waterfowl Management Areas
Beach Access
Interpretative Trail
Observation Tower
OCEAN
SOUND
Photo Blinds
Headquarters/Visitor Contact Station
Beach Access
Wilderness Area
Interpretative Trail
Outdoor Classrooms
Sound Access
Waterfowl Management Areas
Waterfowl Management Areas
Visitor Contact Point/Sound Access

Attachment #2

United States Department of the Interior
FISH AND WILDLIFE SERVICE
PLATEAU BUILDING, ROOM A-5
50 SOUTH FRENCH BROAD AVENUE
ASHEVILLE, NORTH CAROLINA 28801

August 26, 1981

Honorable William R. Gianelli
Assistant Secretary for Civil Works
Department of the Army
The Pentagon
Washington, D.C. 20310

Dear Mr. Gianelli:

In accordance with Assistant Secretary Arnett's August 5, 1981, letter to you, I am providing a copy of the Department of the Interior's draft dredging alternative for the Manteo (Shallowbag) Bay Project at Oregon Inlet, North Carolina. Also attached is a copy of our letter to Colonel Robert Hughes of the Wilmington District Corps of Engineers.

Since the Coastal Engineering Research Center (CERC) conducted the original research on which this proposal is based, I would appreciate any action you or your staff could take to have the proposal reviewed by both CERC and the Waterways Experiment Station.

We look forward to receiving the Corps' comments.

Sincerely yours,

William C. Hickling

William C. Hickling
Area Manager

Enclosures

cc w/attachments:
Director, FWS, Washington, DC (ES)
Director. FWS, Washington DC (AE) - Attention: Mr. Paul Burke
Regional Director, FWS, Atlanta, GA (ARD-E)
Regional Director, FWS, Atlanta, GA (ARD/RW)
Assistant Area Manager, FWS, Asheville, NC (RW)
Field Supervisor, Raleigh ES Office, Raleigh, NC
Colonel Robert Hughes, District Engineer, Wilmington District, U.S. Army Corps of Engineers, P.O. Box 1890, Wilmington, NC 28402
Mr. Ron Hight, Refuge Manager, Pea Island NWR, P.O. Box 150, Rodanthe, NC 27968
Mr. Bill Harris, Superintendent, National Park Service, Cape Hatteras National Seashore, Route 1, Box 675, Manteo, NC 27954
Colonel Dan E. McDonald, Consultant Engineer, North Carolina Department of Commerce, Dobbs Building, Room 673, 430 North Salisbury Street, Raleigh, NC 27611
Senator Jesse Helms, Federal Building, P.O. Box 28125, Raleigh NC 27611 - Attention: Mr. William Berryhill, Jr., Staff Assistant
Dr. John Costlow, Director, Duke University Marine Lab, Beaufort, NC 28516
Dr. Jay Gogue, National Park Service, Natural Science and Research Section, Federal Building, Room 1058, 75 Spring Street, S.W., Atlanta, GA 30303
Mr. David Wright, Office of Park Planning and Environmental Quality, National Park Service, Department of the Interior, Room 3129, 18th and C Streets, N.W., Washington, DC 20240
Mr. David Jervis, Chief, Office of Environmental Compliance, National Park Service, Department of the Interior, Room 1210, 18th and C Streets, N.W., Washington, DC 20240
Senator John East, P.O. Drawer 25009, Raleigh, NC 27611 - Attention: Mr. Calvin M. Kirven, Staff Assistant

# DRAFT

## MANTEO (SHALLOWBAG) BAY

## A DREDGING ALTERNATIVE PROPOSAL

### OBJECTIVE:

To provide a viable alternative to the construction of fixed jetties for inlet channel stabilization at Oregon Inlet, Dare County, North Carolina.

### CRITERIA:

The proposed action must be able to: (1) create and maintain a navigation channel measuring approximately 20 feet deep by 400 feet wide from the Bonner Bridge, through the inlet, over the ebb tidal bar leading to open water; (2) dispose of dredge material in a manner that will not allow the loss of material from the longshore littoral drift process (sand-budget); (3) operate in a manner that can achieve channel maintenance goals while reducing or eliminating adverse impacts on both Pea Island National Wildlife Refuge and Cape Hatteras National Seashore and to fish and wildlife resources; and (4) operate cost effectively.

### PROPOSAL:

The proposal consists of a dredging alternative that can create and maintain a channel through Oregon Inlet at the authorized dimensions. No land based operational facilities and few, if any, local land based service or berthing facilities will be required. The proposal involves bypassing sand from the channel to the downdrift surf zone located immediately outside the inlet shoal complex. Energy associated with the littoral drift process, especially in the vicinity of Oregon Inlet, will be utilized to redistribute dredge material in a manner that is consistent with natural sand movement processes. This methodology was tested during 1977 and 1979 at New River Inlet, North Carolina (Schwartz and Musialowski 1980) and at St. Augustine, Florida in 1979 (Evertts, pers. comm.) with encouraging results.

The Oregon Inlet dredging alternative will involve the use of both Corps of Engineers and commercial dredge operations, new equipment and methodology testing. As such, this proposal represents a research effort that may be converted to an operational mode within five years.

Oregon Inlet is presently being dredged through an intermittent operation in an attempt to maintain the navigation channel to the authorized depth of 14 feet and a width of 400 feet. Since 1960, the Corps of Engineers has been marginally successful in its efforts to reach those dimensions. Present estimates indicate that authorized dimensions are reached approximately 25 percent of the time. High littoral drift rates, a comparatively short weather window and funding limitations have contributed to the lack of success. With the 1970 authorization for the Manteo (Shallowbag) Bay project, the Corps was authorized to increase the channel dimensions by 40 percent to 400 feet in width by 20 feet in depth. Project designers have stated that this feat only can be accomplished with feasibility by structural stabilization, such as the proposed jetties and with sand-bypassing.

The proposed dredging alternative would require a series of progressive operational experiments to develop fully a comprehensive methodology capable of maintaining the authorized channel dimensions. This proposal calls for a three phased study. Each phase would last at least one year in order to monitor effects through an entire winter-summer wave regime. Careful analysis at the end of each phase would determine whether additional monitoring time was necessary prior to initiating the next phase. Additional monitoring should not occur in the initial phases unless atypical weather conditions, mild or extreme, exist during the period.

Each phase of this proposal builds on the knowledge of the previous phase in order to expedite the final operational mode for channel maintenance. That is, knowledge gained from the first phase potentially could alter, completely or partially, the next proposed phase.

It will be extremely important to develop as quickly and as accurately as possible an operational mode that will maintain the desired channel with the least impact on adjacent park and refuge lands.

PHASE I: Fall 1981

Since the inner channel location is dictated by the constraints of the bridge passage, the first step will be to acquire and analyse historical data to determine the best "natural" location for the outer channel. This essentially means locating the proposed outer channel where it would be in best equilibrium with the natural forces attempting to act on the inlet. This could be done expeditiously using a time series of aerial photographs and survey data previously collected in conjunction with past dredging operations. At the same time, all available wave, littoral transport, current and hydrographic data would be studied to make an initial determination regarding where to place the dredged material. As Phase I proceeds, careful monitoring of the channel, ebb tidal delta, and initial sediment placement zone will determine whether changes in strategy should be made.

In this phase, a CURRITUCK-type split-hull hopper dredge would work in concert with a SCHWEITZER-type side-casting dredge, already in extensive use in the inlet. Duties of each dredge would be determined based on where each works most effectively. Since the side-casting dredge deposits material only a short distance away from the channel, it may work most effectively on the ebb tidal shoal casting material down drift for that given time period. The hopper dredge might be more effective working the inner channel where total removal of material from the system is important. Disposal of the material would be down drift of the inlet at a preselected disposal area. When necessary, both dredges could operate to alleviate extensive or accelerated shoaling at a particular site along the entire navigation channel. The exact operating scenario would be developed as Phase I progresses and data are collected and analyzed. The key will be moving the greatest volume of material in the least amount of time and keeping as much of it in the littoral system as possible.

No attempt would be made to exceed the 1960 authorized channel dimensions of 14 feet by 400 feet during this phase. The sole purpose of this phase in the comprehensive research proposal is to understand the operational aspects of maintaining the channel. Collection of hydrographic survey data, disposed sediment migration and placement strategy can be secured and compared with earlier research efforts to aid in developing a detailed strategy for Phase II.

Since dredging alters the characteristic of native material (Hobson 1977; Hobson and James 1978), some effort should be made to monitor possible effects this may have on the disposal-placement scheme.

PHASE II: Fall 1982

Based on data and experience obtained in Phase I, Phase II should attempt to establish and maintain the 1970 authorized channel dimensions of 20 feet by 400 feet. Maintenance of the 1970 authorized channel dimensions should be comparable to the success rate anticipated by a fixed structure alternative. Conceivably, a larger split-hull or hopper type dredge with shallow water operational capabilities will have to be utilized to handle the initial increase in material. The larger capacity dredge may not be able to place dredged material in the same water depth as the CURRITUCK. Accordingly, modification of the disposal-renourishment scheme utilized in Phase I may be necessary. In this case, consideration should be given to other disposal-nourishment approaches such as that proposed by Silvester and Ho (1974) of creating artificial headlands offshore and allowing the beach to accrete naturally out to it. This concept was used successfully to reclaim land in the Singapore Harbor during the early 1970's. Another method, a dual approach of offshore dumping and foreshore stockpiling was used successfully at Copacabana Beach, Brazil (Vera-Cruz 1972).

An extensive laboratory study (Kamphuis and Bridgeman 1975) to simulate placement of material immediately seaward of offshore bars under large and small storm conditions showed that the material moved shoreward and accreted to the beach when subjected to summer-type waves. Deeper placed sediments tended to be carried offshore and did not return with summer-type waves. The importance of placement depth and season are well recognized. Although the lab study showed material being permanently lost to the offshore, a study by Nordstrom and Inman (1975) concluded that material is naturally transported on and offshore seasonally from the beach face to minus three-to-nine meters of water depth with winter and summer wave conditions. This implies that deeper water depths could be suitable for placement if properly chosen.

Offshore placement of material has been attempted with varying degrees of success at Long Branch, New Jersey (Hall and Herron 1950; Harris 1954), Atlantic City, New Jersey (Hall and Watts 1957) and Santa Barbara, California (Wiegel 1964). In most of these cases, the material was placed in relatively deep water of six-to-12 meters and little or no significant movement occurred. Conditions at Oregon Inlet must be carefully monitored to determine the most beneficial placement depth, time and location and to avoid losing material from the littoral system.

Typically, at tidal inlets, large quantities of sand are tied up in the ebb-tidal delta complex. Maintaining the authorized channel dimensions will be more difficult in this area because of the high influx of littoral material and severe wave conditions that can develop on these shallow shoals. Careful monitoring and planning are most important in this area. Selection of a channel location and orientation across the delta that is in best equilibrium with natural forces and makes maximum use of natural bypassing will be a major concern during the Phase II study.

Based on the estimated annual drift rate across Oregon Inlet of 1.8 million cubic yards (U.S. Army Corps of Engineers 1980) and the estimated trap efficiency of a 20-foot channel being 80 percent, it would be necessary to dredge approximately 10,000 cubic yards per day for 140 days per year. This is one factor where proper channel orientation will prove most beneficial. If the trap efficiency were reduced to 60 percent by better channel alignment and improved natural tidal flushing, the required dredging would be reduced by approximately 25 percent. If trap efficiency cannot be improved, a dredging technique would have to be developed to handle the 10,000 cubic yards per day during the weather window. Conceivably, two hopper-type dredges may be needed for short periods of time to maintain channel dimensions when littoral drift rates are at a peak. Dredge rates of this magnitude have been attained recently at Newburyport, Massachusetts using the commercial hopper dredge ATCHAFALAYA (T. L. James Co., pers. comm.). During that operation 117,000 cubic yards of sand were relocated in five days.

After three years of Phase II operations, available data will be processed and analyzed for modifying existing dredge disposal strategy, dredging days, dredge design and the timing of maintenance dredging operations.

## PHASE III

Phase III would serve as the transition period from an experimental to an operational mode. The complexity of Phase III would be determined by the results of data analysis of the previously collected information. Presumably, major modifications would not be needed during this time; however, this phase would focus on refining the application of the developed techniques. Until an operational mode is achieved, detailed site monitoring should be maintained.

During this phase, channel maintenance would proceed using Phase II technology. Variations in that technology would be tested as necessary. One suggested scheme might be to create a sump-storage area. Material stored in this area could be returned to the nearshore system or used for beach erosion control and bridge protection purposes. This method could be used when dredges are on-site and confined to the inner channel due to weather conditions.

## COSTS:

Preliminary estimates indicate research associated with this proposal could be conducted for less than $600,000 per year. This estimate includes salary, monitoring and other miscellaneous expenses. Cost estimates based on utilization of state-of-the-art dredging equipment and techniques indicate that this method could accomplish the goal for approximately three-to-five million dollars per year.

SUMMARY:

Early in Phase II operations, a relatively safe and fully dimensioned navigation channel would be available at Oregon Inlet and open for fishing vessels utilizing the newly expanded facilities at Wanchese Harbor, North Carolina. At the close of Phase III operations, the entire channel maintenance responsibility could be turned over to commercial operators with only a moderate level of site monitoring necessary by the Corps. If Phase III research is developed to its practicable limits, overall channel maintenance operations could be streamlined to a reasonable level of efficiency and the advantages of employing similar methodology elsewhere would present themselves.

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# TESTIMONY ON S. 1471 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

UNITED STATES SENATE

SUBCOMMITTEE ON WATER RESOURCES

SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION

FEBRUARY 6, 1984

BY: MELVIN R. DANIELS, JR.
NORTH CAROLINA STATE SENATOR
CHAIRMAN, SOUTH ATLANTIC FISHERIES MANAGEMENT COUNCIL

# TESTIMONY ON S. 1471 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

UNITED STATES SENATE

SUBCOMMITTEE ON WATER RESOURCES

SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION

FEBRUARY 6, 1984

My name is Melvin R. Daniels, Jr., and I am a member of North Carolina's First Senatorial District, which includes the Oregon Inlet area itself and the primary region of the state whose boats use Oregon Inlet for ocean access. I am also chairman of the South Atlantic Fisheries Management Council, having been a member of the Council for more than five years.

In 1976, Congress passed Public Law 94265, the Fishery Conservation and Management Act. This act extended the the United States jurisdiction over fisheries out to 200 miles and created a new form of regional government throughout eight regional fishery management councils. I am concerned that in keeping with the seven national standards for fisheries management that the fishermen of the northern coast of North Carolina are being discriminated against, under standard #4. Standard #4 states conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate fishing privileges among United States fishermen, such allocations shall be fair and equitable to all fishermen. They must be carried out in such a manner that no particular individual, corporation or entity acquires an excessive share of such privileges.

My interpretation of national standard #4 is based on the fact that no longer can our fishermen of the Oregon Inlet area compete in an equal manner due to the fact that their vessels are unable to transit the shallow waters of Oregon Inlet. They cannot compete with other nations or with other domestic vessels using smaller vessels themselves, which will not allow them to bring adequate catches to local harbors.

It is proven now from economic and feasiblity studies that only the larger vessels can compete in an ever-growing competitive seafood industry. Our fishermen are now competing not only with our own American fishermen but with those of Spain, Portugal, Japan, Canada, Brazil and many of the Iron Curtain nations for the fishery resource.

Economics have shown the larger vessels have an economic advantage of from 2 to 1 to 3.8 to 1 over smaller vessels who must come in more often to unload their cargo.

The ratios that economists use to justify larger catches are based on the fact that more ice is used, more boatbuilding takes place, there are larger sales of fuel, general supplies, storage, electronic services, groceries and other costs to the crew. All of this adds up to more employment and a larger multiplier for economic benefits.

The cost per unit has gone up and in many cases, the landings have gone down. The only way that the fishermen can justify their existence is with larger vessels and more tonnage. Under present conditions, this cannot be achieved at Oregon Inlet and the fishermen are facing severe discrimination.

We hear a great deal of discussion about whether the project will be ecologically and environmentally damaging to the area. The concept of jetties is as old as time. Recorded history shows the Phonecians and the ancient seamen of the Mediterranean area were using jetties to protect their harbor entrances. As a professional pilot for 40 years, I have flown from the ice slopes of Iceland to the lower tip of Argentina. There are jetties all over the Atlantic Seaboard. Many parts of South America have topography and geography similar to Oregon Inlet. Jetties are an acceptable norm and have proven to have no ill effect on the ecology.

I respectfully suggest that those who are advocating harm to the environment by jetties are speaking for selfish interests who are pleased to see our fish sell in ports that are more favorable to their interests. The others who speak against the inlet and contend the ecology will be adversely affected are all from the world of academia and are speaking only from theory and without fact. From the beginning of our coastal, ecological and environmental time of protection, we have looked to the U.S. Army Corps of Engineers as the number one authority in this area. They do not speak from theory but from proven scientific data. I respectfully suggest that we listen to the voice of proven knowledge and not that of theorists.

In conclusion, let me make my third and most important point: people, their livelihoods and their safety. When we look at the loss of lives and the many millions of dollars of equipment, the very nature of the stabilization of Oregon Inlet is a must. As a port of refuge for not only North Carolina's fishermen but for fishermen from many ports of the nation in time of storm, Wanchese is vital--and accessibie only through Oregon Inlet. There is no other port these fishermen can reach within a short time; they cannot steam to the Chesapeake Bay to the north or to Morehead City to the south.

They need Oregon Inlet and I respectfully request your favorable consideration on S. 1471 which will provide them the reliable sea access as promised by the Congress in 1970 when the Manteo (Shallowbag) Bay Project was authorized.

Written Testimony of

Dr. Robert S. De Santo
Chief Scientist
De Leuw, Cather & Company

on

**Senate Bill 1471**

Before the Committee on Environment and Public Works
Subcommittees on
Environmental Pollution
and
Water Resources

February 6, 1984

The essence of the environmental testimony entered in opposition to the proposed Oregon Inlet jetty and sand bypass system alleges that the proposal will cause significant loss of land up-coast and down-coast of the inlet. Of less apparent importance, but none-the-less cited as an environmental concern by at least two witnesses, is their belief that fry fish, and other estuarine organisms, might be swept or directed by the proposed channel into deeper waters than would otherwise be the case. They allege that such a possibility would cause those shallow water organisms to fall prey to other organisms from which they would otherwise be protected.

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Socio-economic considerations of this proposed project are not considered here since those facets must not confuse the evaluation of probable ecological impacts. The social and political decisions about this proposed project must be made with the benefit of advice on the scientific aspects from bonafide witnesses. However, those who testify must not confuse their own political or social views with their appraisal of the science of the proposal upon which they offer their opinion. It appears that those offering testimony in opposition to the proposed project have mixed interpretations of science with the political and socio-economic aspects of their testimony.The testimony offered here is focused only on the ecological and environmental aspects of the proposal and on the doubts which have been raised about those aspects. In that respect, the prospects of significant erosion, accretion, and associated physical aspects of inlet stabilization, are well known. Furthermore, the relevant principles of physical oceanography and coastal zone mechanics are not in dispute here. What is in dispute centers on conflicting judgements related to whether or not the specific design for the stabilization of Oregon Inlet will work, and whether judgements made by the Corps of Engineers relative to channel depths and methods of maintenance are correct and best suited to the problem at hand.

Relative to the physical aspects of the proposed project, opposition testimony was entered which claimed that jetty systems used to stabilize dynamic inlets do not work. This is not correct, based upon both the scientific literature and the experience of field engineers working with the evaluation of such jetty systems. The Kieslich report entitled, "Tidal Inlet Response to Jetty Construction," was improperly interpreted because it evaluated single jetty systems and it did not deal with sand bypass systems. Therefore, it is misleading and inapproriate to suggest that that study weakens the proposal for a dual jetty system in conjunction with a sand bypass system at Oregon Inlet. In fact, testimony which deals with a partial solution to an inlet stabilization problem is misleading. A partial solution will not work, is not acceptable, and is inappropriate to use in judgement of the Oregon Inlet proposal.

Such misleading testimony demonstrates an incomplete understanding of the fundamental and inseparable aspects of the Oregon Inlet proposal.

Not only must the jetty system itself be evaluated, but the acceptability of that system must be judged in combination with the proposed sand bypass system. There seems to be no dispute that both systems must function satisfactorily if the inlet is to be stabilized and if coastal erosion is to be prevented. However, erroneous claims in the record are made which allege that no successful jetty systems and sand bypass systems exist. Indeed, many do exist throughout the world, but selecting an example for appropriate comparison with the Oregon Inlet proposal naturally narrows the field considerably. Probably, the best comparative example is the Channel Island Harbor jetty and sand bypass system in California. There, a dual jetty system, on a high energy coast, is maintained in conjunction with a dredge-operated sand bypass system. A stone breakwater parallels the shore on the updrift side of the jetty behind which a dredge removes sediments. Periodic dredging totals between 1,000,000 and 3,000,000 cubic yards of sand a year. This compares with the 500,000 to 600,000 cubic yards of net sediment transport which are estimated to be the dredging requirements at Oregon Inlet in order to prevent downdrift shore erosion there. The fixed breakwater at Channel Island Harbor is equivalent in function to the proposed Sloping Float Breakwater at Oregon Inlet.

Considerable objection has been entered into the record relative to the proposed Sloping Float Breakwater relative to its experimental and allegedly unproven design. It is acknowledged that the design of this feature is not yet final. Therefore, it seems that the real question raised by some of those opposing this project is whether or not the Corps of Engineers can develop a Sloping Float Breakwater which can work at Oregon Inlet. I see no individual or group with more or better information, experience, or capability to successfully undertake such a task. Attached to this testimony is a much abbreviaterd list of references which lists some of the past work the Corps has used to help in the design and testing of the breakwater design being evolved. The type and perfusion of such studies and preliminary design documents represent a state-of-the-art effort which will work from a scientific and engineering framework.

I believe that the Corps of Engineers can design the prerequisite floating breakwater. However, whatever the final design, an overall project perspective must be maintained from which the objective of that design can be born in mind. A breakwater was proposed in order to increase the efficiencies of the project by allowing the dredge to work with less dependency upon naturally nominal sea conditions. Dredging could thereby be undertaken in a larger window of time than would otherwise be the case. Working in such a protected environment, the dredge could remove between 500,000 and 1,000,000 cubic yards of sediment per month. The floating breakwater at Oregon Inlet was proposed in answer to concerns that a fixed, stone breakwater parallel to the beach would be an eyesore. The proposed Sloping Float Breakwater is being evolved as a prototype unit created as a result of a powerful engineering effort. Nevertheless, success of the stabilization of Oregon Inlet does not depend on that breakwater. It depends on a dual jetty system and a sand bypass system. The breakwater makes a part of the bypass system more efficient. The overall concept of sand bypassing is made more flexible and foolproof by incorporating the proposed Secondary Sand Bypassing System which allows for the subaerial removal of accretion fillets impounded by either the north or south jetties. This proposed system was operated near Oregon Inlet in 1971, and involved the transfer of approximately 300,000 cubic yards of sand from the exposed cuspate foreland at Cape Hatteras northward for a distance of about 3.5 miles to the beach at the Town of Buxton.

Based upon my consideration of these facts, I believe the proposed sand bypass sytem is unusually redundant. That is, the dredging necessary to insure success in passing the modeled or empirically derived volume of sand past the proposed jetties, or into the bay if so desired, could be accomplished by a combination of established or new dredge methods. Success, therefore, is not dependent upon any one unique system, and the proposed system is dependable, as a whole.

Relative to the concerns expressed in the record for ecological impacts of aquatic life resulting from the proposed project, there is no substance in the literature or in the record of this project which suggests that a real problem is probable. The proposed system is designed such that there would be no volumetric difference, or chemical (i.e. salinity) change between the present estuarine system and one in which the proposed jetty system were present. It appears that the natural populations of organisms in the Oregon Inlet area are inherently variable and that the currents and turbulence there are such that statistical analyses is not helpful in making a reliable prediction. A sufficiently long record of baseline data does not exist. Nor would it be possible to collect the necessary scientific data in less than many seasons of study. However, a judgement relative to probable impacts of jetties on aquatic organisms can be made through our consideration of studies from other systems. Such studies of a jetty system on the west end of Padre Island, (Aransas Pass, Texas) were performed by Copeland and others in the sixties. The purpose of those investigations was to shed light on the movements of various aquatic organisms (i.e. fauna) passing through that jetty system which was approximately 1,000 feet longer than the proposed system at Oregon Inlet.

There is no evidence in the literature, or any other source of information of which I am aware, which suggests that the presence of a jetty system as proposed at Oregon Inlet may have any negative impact upon aquatic life cycles in the area. This conclusion is further supported by work of Applied Biology Inc., as represented in its October 1980 report entitled, "A Literature Review for the Assessment of Larval Fish and Shellfish Movement through Oregon Inlet and Potential Effects of Inlet Stabilization by Jetties."

The suggestion that estuarine organisms would be swept into deeper coastal waters, if the jetty system were implemented, and that such a consequence would negatively impact those populations, is not convincing. This is so since the estuarine circulation currents and volumes within the bay and at the mouth of the proposed jetty system would be essentially unchanged whether or not the jetties were constructed. The differences created by the project are limited to the jetty-protected inlet channel. Those changes of channel depth and stability would have no significant effect on the movement, viability, and general ecology, of entrained organisms as compared with the present physical and biological circumstances which exist there. The theoretical questions which may be raised to the contrary are curious and fanciful but they are not based on the slightest bit of fact.

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# TESTIMONY ON S. 1471 .
# AS IT RELATES TO THE MANTEO (SHALLOWBAG BAY) PROJECT

UNITED STATES SENATE

SUBCOMMITTEE ON WATER RESOURCES

SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION

FEBRUARY 6, 1984

BY

ROBERT G. WILLIAMS
FORMER EXECUTIVE DIRECTOR
WANCHESE SEAFOOD INDUSTRIAL PARK
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My name is Robert Williams. I own and operate an outboard boat and motor dealership in Dare County. I was employed by the State of North Carolina and worked for the Secretary of the Department of Commerce as Executive Director of the North Carolina Seafood Industrial Park Authority and the Wanchese Seafood Industrial Park until January of this year. I worked in that capacity and lived with the political and physical vagaries of Oregon Inlet and the Manteo (Shallowbag) Bay Project for four years.

Establishment of the seafood park in Wanchese was the fulfillment of a dream for many area residents who conceived the idea over thirty years ago. The experience of area residents is backed by commercial fishing tradition dating back to colonial days. When the Congress responded to the vision of the local people in December of 1970 and authorized the Manteo (Shallowbag) Bay Project, they included in that authorization a stipulation that a competent, non-federal body was to develop, operate and maintain an expanded harbor at Wanchese. Dare County and the State of North Carolina accepted this responsibility and entered a pack with the federal government. Ultimately, for administrative purposes, the State of North Carolina singularly accepted the role of oporator, developer, and maintainer of the seafood park in Wanchese.

Wanchese is right in the middle of the richest mix of cold and warm water finfish and shellfish on the Atlantic Seaboard. All eastern seafood markets both north and south can be served by overnight truck delivery from Wanchese. In addition, the 15-acre basin offers a harbor of refuge from offshore storms for fishing vessels in the area.

The people of the State of North Carolina felt they had made a good and proper decision in going forward with their project. Their goal, once this decision had been made, was to insure that their planning, construction, and development coincided with the time schedule of the federal project for the stabilization of Oregon Inlet and access to the sea.

In 1975 it appeared that the advanced engineering and design for the jetty system at Oregon Inlet and the interior navigation channels was far enough along that the state project should commence. By 1976 the state completed land acquisition and began design and construction of state-owned facilities. The waterfront and onshore facilities to support the commercial fishing operations included an enlarged harbor from 2.5 acres to 15 acres, 1,545 feet of concrete bulkhead and dock work, a 290,000 gallon per day waste water treatment system, a water supply system, electrical distribution system within the park, interior roads and hard stand, and area lighting within the park and along the roads.

There being no indication of significant problems with the federal portion of the project, the State of North Carolina awarded contracts for harbor enlargement and the beginning of construction of the on-shore facilities. Completion in 1981 was anticipated, and, in fact, was achieved.

In order to provide a broad-based management concept to the park, the General Assembly of the State of North Carolina created a Seafood Industrial Park Authority, which consisted of eleven leaders of the business community from across the length and breadth of the State of North Carolina. This Park Authority, working with the Department of Commerce,oversees the operation of the park. The newly formed

Authority expressed the concept of the park in the following words: "The Wanchese Seafood Industrial Park is to be an efficient commercial seafood handling/processing center, with modern facilities to land, handle, and process; and to ship or tranship to any place or places in the State of North Carolina, to other states, and to foreign countries, all marketable species of seafood, both finfish and shellfish. The park may contain commercial facilities to support all activities of the park, the labor force, and the vessels which operate therefrom." With this as their goal, we set about the business of locating interested firms to establish facilities within the park. The State of North Carolina was to lease sites and provide basic service to selected firms for construction of seafood and marine related industries. Buildings and facilities within the park were to be constructed by private capital.

After developing a land use plan suitable for the area, it was anticipated that approximately $21 million of private capital would be invested in facilities within the park. By late 1980, a great deal of interest had been shown in the project by the private sector. and the seafood industrial park was declared one of the most significant developments for the seafood industry in this century. Not only did Wanchese receive attention from firms within the United States, but firms from Europe and Asia alike visited the site and assessed the viability of Wanchese as a location for their expansion. However, by late 1981, the ocean bar at Oregon Inlet began to take its toll on the new seafood park. The navigation channel became impassable, and on New Year's Eve a trawler was lost to the treachery of this ocean bar.

We, who had acted in good faith to attract major industries to this area, found that industrial interests became a bit shaky. However, in the spring of 1981, Wanchese Shiplift, Inc., the first tenant of the new seafood park, began construction of their facility and the ship repair business opened its doors in the spring. The owners of this firm had invested over a million dollars of their private capital in this very fine facility. They recognized that Oregon Inlet was not yet stabilized, but the word coming to them from the Corps of Engineers and from the City of Washington was that "Have faith, everything is on target."

During the summer and fall of 1981, we who were responsible for the development of the park, continued our efforts to attract reputable firms to locate in Wanchese. We saw, however, worsening conditions at the inlet and in our existing commercial seafood industry. We recognized that a park in which $8.1 million of public funds had been invested, was our responsibility, and a return on each invested dollar was expected.

The operating concept of the seafood industrial park was that within three years after opening the doors for business, the park would no longer demand appropriated funds for operation but would be totally self sufficient. The five-year operating budget submitted in 1980 for fiscal years 1980 through 1985 indicated that the FY 80-81 would see a loss of some $107,000, but by the year 1983-84 a modest profit of $21,000 would be shown to be increased to $140,000 the following year. While the seafood park was not intended to be a profit-making center, it would be necessary to show some advancement and to create a capital source for future improvements demanded by tenants down the line. I deeply regret that we have been unable to live up to this projected budget. I hurt inside when I looked out the window of my office and saw an idle shipyard and 69 acres of emptiness. I regret that the investment in this fine facility has come to naught. But I think about this loss being spread across the State of North Carolina and the total of the United States. I hurt even more when I recognize that in our winter fishery, our offshore ocean fishery, in 1980-81, Wanchese Harbor saw 23,747,726 lbs. of finfish landed and the winter fishery from September to April '82-'83 a reduction to almost half that - 12,342,290 lbs., and this latter figure existing only because some people were brave enough or found it totally necessary to risk their lives, their plants, and their tradition to cross the ocean bar at Oregon Inlet and to land these fish.

The inability of the federal government and the Congress to make good on its promise of a stabilized inlet has added immeasurably to the financial woes that this park or any forward-looking venture undergoes at its beginning. The concept, however, remains in tact. The place is right; the idea is right; but access to the sea must be gained if success is to be achieved.

The seafood industrial park was to create jobs in an economically depressed area. Five hundred primary jobs within the park could have been realized and some 120 secondary jobs outside the park. This would have a tremendous impact on an area whose wintertime seasonal unemployment routinely reaches 20 to 25%, but during last winter reached 42.1 percent.

It was envisioned by the planners of the Manteo (Shallowbag) Bay Project that 180 - 200 oceangoing fishing vessels would be served by the harbor in Wanchese. It was not envisioned, however, that these vessels would all be home-ported in the port of Wanchese. It was therefore necessary that the depth in the basin and the interior channels be appropriate for the projected ocean vessels which would use the port. The average draft of these vessels is 11 to 12 feet. This is not a "large" ship or vessel by any definition as some would have you believe. As a graduate naval architect, I can concur that with this loaded draft, a minimum depth of 14 feet on the interior channels would be necessary and a similar depth within the expanded harbor. I also know from ship design and movement and hydrodynamics that I personally have studied and am qualified to speak on, that a depth of 20 feet in the navigation channel through the ocean bar would still only provide about 80% transit time during the year from the inland waters to the sea or vice versa. However, during that 20% of the time that the ocean bar could not be transited, the weather would probably be such that most of the vessels would be in port and little time would be lost.

The modern, ocean going trawler is a necessity in today's industry if one is to be competitive. A draft of 11 feet does not characterize a "large" ship or vessel by any nautical definition as some would have us believe. However, these vessels are expensive and the mortgage payments do not stop with the cessation of the winter fishery. The captains must be able to take their boats north for a summer fishery. It is therefore, additionally, not economically feasible to design a special trawler for a single port and a "special" inlet.

Of national importance, wholesale processing for export markets, to be done within the seafood park, will recuce the imbalance between the nation's import and export seafood, with a consequent reduction in our serious international trade deficit. In 1981, the United States imported seafood costing about $3 billion and exported a total of about $1 billion - for a trade deficit of $2 billion.

Rougly 55 percent of our total exports were salmon from the West Coast. There is a tremendous potential for export marketing of the seafood to be processed at Wanchese.

Summary

Commensurate with the Congressional action which authorized the federal stabilization of Oregon Inlet by a jetty system, the State of North Carolina constructed in Wanchese a modern seafood industrial park to accommodate the projected product. Over $8 million of public funds were invested in anticipation of a reasonable return on the tax payer's dollar. The joint federal/state project funding included $2.5 million appropriated by the General Assembly, $4.5 million Economic Development Administration grants, $0.6 million Coastal Plains Regional Commission grants, and $0.5 million U.S. Army Corps of Engineers construction dredging funds.

The creation of 620 new jobs in an economically depressed area was seen as greatly helping to reduce the annual 20 to 25 percent unemployment rate.

Providing a safe, realiable passage to the sea would preserve a cultural heritage of commercial fishing which dates back to colonial days.

Realizing the economic benefits of Wanchese Harbor depends on attracting private capital. This cannot occur without improved connecting channels and especially without a safe and reliable channel through Oregon Inlet. The result of leaving the inlet in its present condition will be continued loss of lives and property as a proud people attempt to exercise the privilege of working for an honest living.

I urge your support of Senators Helms' and East's bill, S. 1471, which does nothing more than reaffirm the intent expressed by the Congress in 1970.

# TESTIMONY ON S. 1471 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

UNITED STATES SENATE

SUBCOMMITTEE ON WATER RESOURCES

SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION

FEBRUARY 6, 1984

Harry Brinkley Schiffman

Marina - Tugboat and Charter
Boat Operator. Member of the
Dare County Oregon Inlet
Commission.

Oregon Inlet, North Carolina is a treacherous and ever-changing passage to the Atlantic Ocean through North Carolina's Outer Banks, and adjacent to several large sounds and numerous tributaries. Historically renown as: the home of the Lost Colony, the first attempted English settlement in the new world; the stomping grounds of Edward Teach, better known as the pirate, Blackbeard; the birthplace of aviation via man's first propelled flight by the Wright Brothers; its extremely fertile fishing grounds (sport and commercial); and miles and miles of beautiful sandy beaches. Of the foregoing, most are known from afar. However, to date, the most important aspect, the People of North Carolina's Outer Banks and their needs, have been unjustifiably ignored.

Years ago it was not uncommon for the people of the Outer Banks to give land to those who wished to build a homeplace and settle. By the late 1940's and early 1950's, the U. S. Government, through the National Park Service, was taking note of this fantastic recreational area as evidenced by their acquisition of lands against the will of many landowners of the Outer Banks, but in the purported public interest. This national park was suppose to be preserved in the interest of millions of visitors from all over the world and to be a big boost for local and state economies. As indicated in the attached copies of an article concerning beach preservation, (Ref. # 1) beach recreation is more popular and much less expensive than a combined total of numerous other popular recreational facilities such as tennis courts, golf courses, pools and gymnasiums. A large factor of beach recreation consists of the recreational boaters (small jon boats to large yachts), fishermen who charter headboat trips, or charter individual boat trips in groups of six or less, as well as surf fishermen and jetty fishermen. The latter represents the least expensive good fishing, in that jettys create a natural haven for fish, and do not require the expensive rigs of 4-wheel drives or boats. This would allow many more people the opportunity to fish who could not afford to do so by other means, as exemplified by the attached copy of a recent article in the Salt Water Sportsman, January, 1984. (Ref. # 2)

Presently people from all over the world venture to Oregon Inlet for a taste of the well known sportfishing, scuba diving and other recreational boating, and often are unable to go offshore due to the dangers of the Oregon Inlet passage. A potential commercial fishing fleet of over 200 ocean going trawl boats reached a recent new high in Wanchese the other day when approximately 30 boats successfully negotiated the channels to Wanchese. The U.S. Coast Guard Station at Oregon Inlet is no longer able to keep a boat in the 60 - 80 foot class on station for search and rescue, or its bouy tender due to the conditions at Oregon Inlet. In fact, as I noted just the other day, it appears that the station's small boats are now moored at Oregon Inlet Fishing Center, some additional five miles from the inlet, due to shoaling at the station. Numerous small boaters have discontinued operation in the area after having made some scary trips through Oregon Inlet. Suffice it to say, without objections from any viewpoint, that Oregon Inlet remains treacherous and continues to threaten the livelihoods of numerous businesses in northeastern coastal North Carolina, as well as the recreational avenue for millions of people from the world over who travel to this area to enjoy a portion of our nation's most popular leisure time and activities.

As a U.S. Coast Guard licensee for charter boats, owner-operator of a 60-foot commercial tugboat and a dry-stak and wet slip marina in Manteo, North Carolina, Vice President of the North Carolina Marinas Association, an appointee to the Oregon Inlet Commission, and a member of the Town of Manteo Board of Commissioners, and having family who go back to the founding of Dare County, North Carolina, I have some personal feelings and experiences pertinent to the Oregon Inlet situation which I wish to share with you. (Ref # 3)

As an operator of a charter boat, I know the feeling of returning from 50-60 miles offshore of Oregon Inlet only to find that the conditions have changed at the inlet, making it unsafe to transit the channel. Having departed at 5:00-5:30 a.m. and returned to the inlet at approximately 4:30-5:00 p.m., a major decision of responsibility concerning the safety of the eight (8) lives and a several hundred thousand dollar boat is at stake. Do you take a chance of carefully selecting the proper wave pattern and trying to catch it and stay with it, somewhat like a surfer, knowing that the channel may have changed and that any small amount of error or mechanical failure might spell disaster? Do you try to go 60 miles further to the South and shoot for Hatteras Inlet knowing that you will be marginal on fuel? Or, do you try to ride it out nose into the sea making little or no headway? I am here to tell you that all options have been tried, and none are very appetizing. The charter boat operator, as well as numerous recreational boaters from Vermont to Florida have to make these unnecessary decisions from time to time each season. Those remaining of the commercial fleet who dare navigate Oregon Inlet are faced with these decisions constantly due to the more severe sea and weather conditions of the winter season. As indicated by the record, some never make it.

The failure of our U.S. Government to carry out its promises to jetty Oregon Inlet and maintain adjoining channels was quite evident in the case of the "Darana R" owned by Jimmy Ruhle of Wanchese, North Carolina, who grounded in Oregon Inlet in mid-winter, 1983. This was under rather calm sea conditions, but following a storm which apparently shifted the channel. After approximately 30 hours of attempts by the U.S. Coast Guard boats, the U.S. Army Corps of Engineers' dredge Schwitzer, and numerous fellow trawl boaters to free the "Darana R", I was contacted by an insurance company out of Norfolk, Virginia at 8:30 p.m. and asked to assist with our tug "Lookout". Although we had been refurbishing this boat for approximately one and one-half years, we were not really ready for such a call, nor did we have insurance coverage. Again, what to do? On the Outer Banks of North Carolina when someone is in trouble on the water, everyone who has anything to offer, will assist, even though they become exposed to great risks themselves. Our decision was made, and instead of waiting until the next morning for first light, as indicated to our client, we departed at 12:30 a.m. that night with Jimmy Ruhle's son as part of a makeshift crew to assist. Again, the failure of progress with the Oregon Inlet, Manteo (Shallowbag) Bay Project struck with another of its endless bag of tricks. Within an hour of departure from Manteo, the tug "Lookout" was aground in the channel which is part of this project, and try as she might for some eleven hours while listening to the Coast Guard and other boats ask where the hell is the tug, we were unable to proceed to assist the "Darana R".

Salty Dwag Marina is a dry-stak and wet slip marina located in Manteo, North Carolina, some eleven nautical miles from Oregon Inlet, and the only dry-stak between Virginia Beach, Virginia, some ninety miles to the north and Morehead City, North Carolina, located some 175 miles to the south. This type of facility is a packed house situation at all coastal areas where a safe inlet is within range. In fact, they all have waiting lists, and as in Morehead City, there are sometimes three or more such facilities in that condition. Two years ago, our six year old marina was at only one-third capacity and due to even more publicity about the dangers of Oregon Inlet and some more people actually experiencing the problems in person, our rental of spaces dropped some 45 percent this immediate past season. We make it a point to ask owners whose boats are leaving our custody, about their reasons in order to hopefully improve our operations. And, I am often told of people and their families having the "hell" scared out of them at Oregon Inlet, thus causing them to seek safer boating areas. Obviously, these people pass the word, which further adds to the economic problems northeastern North Carolina is having to overcome such as 42 percent unemployment in Dare County during the winter of 1982-83.

As Vice President of the North Carolina Marinas Association, I have a direct link to boaters and marina operators in other parts of North Carolina, and in other areas throughout our nation. Oregon Inlet's fertile fishing grounds attract many adventurous boaters, and usually manages to send them home with a much better appreciation of life, if they are lucky. Amongst the recreational boating community, including boat builders, manufacturers, distributors and all marine related businesses from finance to insurance, oil companies, grocery stores, restaurants and motels, etc., all are astonished at the failure of the U.S. Department of Interior to do their part at Oregon Inlet. On the other hand, our government, which I still feel is the best anywhere, finds ways and means to send many times more dollars ($) to other areas of the world. How about the forgotten home folks???

Being a member of the Board of Commissioners of the Town of Manteo, where we are preparing to kick off a four (4) year celebration of the 400th anniversary of the "Lost Colony", and an appointee to the Dare County Oregon Inlet Commission,'has allowed me to obtain a tremendous amount of information about the real potential economic impact that Oregon Inlet could have, if stabilized and maintained. The lack of a remedy to date pertains to businesses of all sizes, large and small, in all of northeastern North Carolina. In fact, if compared with the good effects it could have, plain ole country common sense will tell you that the costs of building and maintaining this project is small potatoes as related to the funds it could generate in our local, state and federal economy.

Having a great grandfather (Ref # 3) who was one of the founders of Dare County, and a great uncle who helped push off the Wright Brothers first powered flight from the sand dune at Kitty Hawk, is only a partial illustration of my personal family involvement in the Outer Banks of North Carolina. The National Park Service decided in 1952 to set up a very large area of the Outer Banks ocean front property, and others, for the enjoyment and recreation of the general public. As the National Park Service indicated the boundaries from Bodie Island, just north of Oregon Inlet, to Ocracoke Island, they outlined their intent to protect and cooperate with the local peoples and communities in every way (Ref # 4). Some 70 miles or 30,000 acres of very prime ocean front property was then taken for this project at a bargain price of $1,236,000.00 (Ref # 5 & 6)

At the time of this fine deal for Uncle Sam, the people of Dare County, North Carolina and the world were promised beach access and protection from erosion along with government cooperation with local community needs and efforts effected by this park. In the mid-forties, local, regional and state interests began working on a stabilization process for Oregon Inlet. December 31, 1970, after six years of intense study, saw the authorization of the current project, which by all indicators led the people of Dare County and numerous other northeastern coastal counties, the State of North Carolina, and people from around the world to believe that Oregon Inlet would at last be stabilized and maintained. Thus, the people of our area from commercial fishermen to small shop keepers to marinas, to local governments, etc. made plans for the economic future development based on governmental promises and indicators. Larger trawl boats to compete in the National ocean fisheries, expanding businesses such as hardware stores, grocery stores, marinas, banks, and on, and on, and on, and on, geared up for this economic phenomena.

I am here to tell you in summary a portion of the feelings of these people. The need for this project is unquestionable, as evidenced by the more detailed information from testimony such as the U.S. Coast Guard as related to search and rescue, and safety, the State of North Carolina on local and state economics, individuals from the commercial fishing industry, Dare County officials, and the U.S. Corps of Engineers who have studied the project in more detail and spent more funds in doing so than any previous project of similar nature. The Corps simply and finally states that only via a dual jetty system and some annual maintenance, can Oregon Inlet be stabilized, and that a sand by-pass system must be incorporated in order to assure no adverse effects, rather to reduce some of the effects of accelerated erosion already in process.

How often does one have a coastal engineering research center within a a few miles of a proposed project (Ref # 7, 8, and 9). Plain ole common sense tells one that if you dig a hole that continually has lateral overwash, the hole tends to fill, depending upon the frequency and severity of the overwash. Just trying to dig and redig and watch conditions worsen lacks understandable logic. The simple economics of 200 trawl boaters or making 26 trips per winter season multiplied by an average of $10,000 per trip equals 52 million dollars of raw revenue from a winter season alone. This does not include associated business benefits of which there are many, nor does it include the potential benefits of recreational boating and associated business benefits, and all the other businesses that would prosper from the increased flow of people and revenues. Basic economics can easily justify the stabilization of Oregon Inlet without the necessity of more studies.

At the brink of disaster are livelihoods, including and surrounding commercial fishing, recreational boating, coastal search and rescue, national security and maritime patrol, the ecology of our estuarine system, and by no little means, the economy of the State of North Carolina. Oregon Inlet is the major artery to and from the sea for all of coastal northeastern North Carolina. During the last 30 years, shifting sands which accompany the natural movement of sand from north to south along the Outer Banks of North Carolina have constricted this navigable channel causing loss of life, livelihoods, and due to reduced flow of water, may be a large contributor to the ever increasing pollution of our rivers and sounds inside of the outer strand.

To be more specific, nine (9) lives have been lost at Oregon Inlet since 1969 as reported by the United States Coast Guard. Efforts to stabilize this passage began in 1946 with funds appropriated in 1960, and greater than $800,000 is spent annually in attempts to maintain navigable water depths in the inlet channel via dredging. It is my understanding that greater than six (6) million dollars has recently been spent in the never-ending task of dredging. On December 31, 1970, after six years of intense study, Congress authorized the current project in the River and Harbor Act of 1970. At this time the project was estimated to cost approximately $4.0 million in annual maintenance cost. During 1981, a seafood industrial park in Wanchese was completed at a cost of approximately $8 million.

The citizens of coastal North Carolina have been forced to once again turn to their Congressional representatives for help. Moved by a 42 percent unemployment in the winter and spring of 1983, the reduction of a commercial fishing fleet of some 200 boats to less than 20; the loss of potential revenues conservatively amounting to some $52 million from fishing payloads alone per year; the closure of our only metal shipbuilder, all four electronics firms and the first and only tenant of Seafood Industrial Park in Wanchese; immense damage already done and getting worse to the charter boat fleet and the recreational boating industry by the infamous reputation of Oregon Inlet; losses being incurred by the State of North Carolina by a nonactive seafood park costing some $8 million; a national wildlife refuge threatened by accelerated erosion; and the ill-effects being felt by every business in coastal North Carolina; Senator Helms and Senator East, Congressman Walter B. Jones and Governor James B. Hunt, Jr. have been approached for help. A lot of businesses had greatly increased their capacities or expanded with the assurance that the stabilization of Oregon Inlet was near. This was a direct result of the United States Congress authorization and funding of the project and the construction of the Industrial Seafood Park. Once again, coastal North Carolina was led amiss.

This project of Oregon Inlet, Manteo (Shallowbag) Bay has been overstudied. From engineering circles, environmentally and economically, this is a sound project. For the people, past, present, and future of North Carolina's Outer Banks and adjacent coastal communities, as well as those from afar, the time has come for this long overdue project to come to fruition, and we are here today to ask for your assistance in making this possible. Please, if you have any doubts, come to Oregon Inlet and see for yourselves. Whether you are a Congressman or laborer, a contractor or a grocer, an insurance man or a mechanic, or whatever your vocation, any decent human being should have absolute compassion for the challenges and hardships the citizens of northeastern North Carolina are facing in their efforts politically and monetarily to stabilize Oregon Inlet.

Thank you for this opportunity to relate some feelings that many, many people share about Oregon Inlet, North Carolina and its dilemma.

## REFERENCE LIST

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4. "A Letter to the People of the Outer Banks." THE COASTLAND TIMES (October 31, 1952). p 5.

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6. "Park Service Sets Up Plans for Acquisition of Lands for Seashore." THE COASTLAND TIMES (July 25, 1952). pp. 1, 8.

7. "Field Research Facility", Duck, N.C. U. S. Army Corps of Engineers Brochure. (1983).

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9. "Capabilities of the Army Corps of Engineers' Field Research Facility"

# REBUTTAL TESTIMONY ON INFORMATION PRESENTED ON H.R. 3082 - MANTEO BAY PROJECT
GIVEN BEFORE UNITED STATES HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON PUBLIC LANDS AND NATIONAL PARKS

FOR THE RECORD ON S. 1471 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT
UNITED STATES SENATE
SUBCOMMITTEE ON WATER RESOURCES
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
FEBRUARY 6, 1983

BY: HARRY B. SCHIFFMAN
MEMBER, DARE COUNTY OREGON INLET COMMISSION
MANTEO, NORTH CAROLINA

REBUTTAL TESTIMONY FOR THE RECORD ON S. 1471 - MANTEO BAY PROJECT
UNITED STATES SENATE
SUBCOMMITTEE ON WATER RESOURCES
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
FEBRUARY 6, 1984

During the hearing held on H.R. 3082 held before the Subcommittee on Public Lands and National Parks on January 30, 1984, opponents of Title IV made erroneous statements about the jetty construction project itself, the current status of the fishing industry in Dare County and North Carolina and potential impacts with and without the project. While we assume these statements were made in good faith, it is Dare County's contention that the record needs to be made clear. Following are quotes from opponents' testimony which are in error and the facts which refute those statements.

"The corps has ignored a viable alternative, hopper dredges, by insisting on an undemonstrated need for a 20 foot (deep) channel." -Larry Williams, Sierra Club.

"The jetties, as you know, are designed to maintain a 20-foot channel depth, but the collapse of the Corps' 'squid scenario' for economic development makes it difficult to avoid the conclusion that a 20-foot depth is excessive to practical requirements." -Ken Hunter.

THE FACT IS that 14 feet is not an adequate depth for the boats that are attempting to fish out of Oregon Inlet now. These boats all draw between 11 and 12.5 feet with a full hold; any inlet swell greater than two feet places these boats in danger of running aground in a 14 foot channel when the vessel is at the bottom of the wave trough. The 20 foot depth is essential for the trawlers now based at Wanchese and elsewhere along our nation's east coast who fish waters within 15 miles of Oregon Inlet during the winter months to reach a safe harbor at Wanchese.

"In 1983, the Corps contracted for the first time a hopper dredge to construct and maintain a channel through Oregon Inlet." - Derb Carter, Jr. North Carolina Wildlife Federation, Page 5.

THE FACT IS that the corps of engineers HAS used hopper dredges in addition to sidecast dredges in the past. The Corps General Design Memorandum, Phase II, Appendix 5, page 5-2, 1980 says "The existing 14 feet deep 400 foot wode ocean bar channel was initially excavated in 1960 by the U.S. Government hopper dredge HYDE. Subsequent maintenance dredging of the ocean bar channel was performed exclusievely by the HYDE through 1964. Beginning in 1965 and extending to 1971, combined employment of the HYDE and the U.S. sidecast dredge MERRITT was instituted in an effort to maintain channel dimensions. In these operations, the MERRITT was used to develop a pilot channel for the HYDE since channel depths and widths between dredging events normally decreased to limits which were inefficient and/or unsafe for the operation of the HYDE. Indeed, during the course of dredging Oregon Inlet in 1968, the HYDE was driven aground on the south side of the ocean bar by heavy seas and was nearly lost. The HYDE was used again in Oregon Inlet in 1969, 1970 and 1971... For the most part, the past and present dredging efforts in the ocean bar channel have not been sufficiently intense to adequately maintain project depths for any substantial length of time. (See attached chart, Attachement I.)

"Intensified channel dredging offers a reasonable alternative to jetty construction." -Orrin Pilkey, Jr., Page 3, section (5)

THE FACT IS that the U.S. Army Corps of Engineers has conducted extensive studies of an intensified channel dredging alternative and has concluded in a report entitled Feasibility Study, Dredging/Nearshore Disposal Plan, Oregon Inlet, N.C., January 1983, that such a plan is unfeasible "as it would result in catastrophic and unacceptable erosion along the northernmost 3 miles of Pea Island." (Page S-2). The study says, "With respect to shoreline behavior associated with the nearshore dredged material disposal scheme, the investigation found that severe erosion would occur along the northernmost 3 miles of Pea Island situated south of and adjacent to Oregon Inlet. In a short period of 16 eyars following implementation of the dredging/nearshore-disposal scheme, the northernmost 3 miles of Pea Island would be virtually destroyed. Damages to cultural development in that time period would consist of a loss of approximately 450 acres of land, destruction of 3 miles of N.C. Highway 12 including access to the bridge spanning Oregon Inlet, loss of the U.S. Coast Guard Station at Oregon Inlet, and loss of all facitlities within the zone of erosion that are administered by the U.S. Fish and Wildlife Service." (Page S-2; See Attachment II).

Ken Hunter's written testimony contains numerous statements which must be examined. "The Coastal Barrier Resources Act...welded environmental protection and fiscal restraint in pulling the federal government back from its misguided participation in development projects on undeveloped, unprotected barrier islands...this same committee (Merchant Marine and Fisheries) has reported out this utterly contradictory Title IV." (Page 1).

THE FACT IS that the particular barrier islands in question under Title IV, Bodie Island to the north and Hatteras Island to the south are both developed and protected. They are serviced by roads, bridges and other development; the northernmost tip of Hatteras Island, known as Pea Island, contains structures housing offices of the U.S. Fish and Wildlife Service. Hatteras Island contains the communities of Rodanthe, Waves, Salvo, Avon, Frisco, Buxton and Hatteras; Bodie Island contains Nags Head, Kill Devil Hills, Kitty Hawk and Southern Shores, all of which are developed. Only Buxton Woods, a maritime forest located at the southern end of Hatteras Island, some 40 miles south of Oregon Inlet, is the only area to be included on the federal Coastal Barrier Island maps in Dare County as "undeveloped." The stretch of coastline which is included in the Cape Hatteras National Seashore has been protected over the years by artificial dunes put in place specifically for that purpose.

"The compromise is already in place. And so far it is working! Something important--and encouraging--happened at Oregon Inlet this Fall. The Corps of Engineers terminated years of resistance and contracted for use of a private hopper dredge. And as the T. L. James Company's Mermentau worked from September to New Years, succeeding profiles of the channel bottom confirmed the dredge was producing a far better channel than had ever been established by the little side-casting dredges that the Corps has used over the years." (Pages 3-4). -Ken Hunter

THE FACT IS that the hopper dredge contract had to be extended in an attempt to achieve project width and depth (14x400) and those dimensions were never maintained. Corps surveys and status reports testify to the changing nature of a dredged channel:

Dredging Activities at Oregon Inlet, 12/6/83-12/12/83: "The latest survey, which was done on 29 Nove 83, indicated approximately a 240-foot wide channel with a controlling depth of 15 feet."

Dredging Activities At Oregon Inlet, 12/13/83-12/19/83: "The latest survey dated 14 December 1983 indicated approximately a 290-ft wide channel with a controlling depth of 14 feet. "

Dredging Activities At Oregon Inlet,12/20/83-12/29/83: "The latest survey dated 14 Dec 83 indicated approximately a 290-foot wide channel with a controlling depth of 14 feet."

Dredging Activities At Oregon Inlet, 12/30/83-1/10/84: "The latest survey dated 29 Dec 83 indicated generally a 375 foot wide channel with depths of 16 feet and greater. At one point at the outer end of the bar channel, controlling depths of 15 feet are encountered. Midway out, the width is restricted to approximately 320 feet for a relatively short distance. These conditions appear to be holding or improving slightly with sidecast dredging."

Dredging Activities At Oregon Inlet, 1/11/84-1/15/84: "The latest survey dated January 10, 1984, indicates generally a 375-foot-wide channel with depths of 16 feet and greater. At one point on the outer end of the channel, a shoal on the south side restricts the width to 340 feet. Approximately midway out on the channel, the width is restricted to 350 feet due to shoaling on the north side of the channel. On the portion of the channel closes to the bridge, the channel width is not restricted; however, a shoal on the south side has shifted the channel approximately 75 feet to the north."

Dredging Activities At Oregon Inlet, 1/16/84-1/22/84: "The latest survey dated January 10, 1984, indicates generally a 375-foot-wide channel with depths of 16 feet and greater." (The rest of the report is worded exactly as is the report for 1/11/84-1/15/84.)

Dredging Activities At Oregon Inlet, 1/23/84-1/29/84: "The latest survey dated 23 January 1984, indicates generally a 280-foot-wide (emphasis ours) channel with depths of 16 feet and greater...A shallow area on the south side at buoy 3 extends to the 100-foot south range and has a controlling depth of 14 feet. A very small spot which is shoaled to 11 feet is located approximately 500 feet east of the draw of the bridge."

To summarize, widths during the period 12/6/83 to 1/29/84 have varied from 240 feet to 290 feet to 375 feet with restrictions back to 280 feet. At the same period of time, channels west of the bridge have varied in depth from 9 to 9.5 feet to 10.5 feet and have also varied in width and location. Depths on the bar have varied, from a 14 to a 16 foot controlling depth, NOT the 19' depth Mr. Orrin Pilkey asserted in his spoken testimony.

The channel at the ocean bar is to be maintained under a 1950 dredging authorization at 400 feet by 14 feet, which even the hopper effort this past winter was unable to achieve or have maintained.

Ken Hunter writes (Page 4), "But has the Corps, or the Oregon Inlet Commission or the local newspapers ever contrasted the $3.4 million proposed for sand bypassing with the lesser annual costs of dredging over the past decade?"

THE FACT IS that while the costs for dredging have been lower during the past decade, these efforts have never succeeded in maintaining the channel as authorized. (See Attachment I). And the cost in terms of lives lost and vessels lost has been devestating. The U.S. Coast Guard reports nine deaths at Oregon Inlet during the period 1969-79; at least four ocean going trawlers have been sunk at Oregon Inlet during the past 10 years and many, many more have been seriously damaged, requiring Coast Guard assistance and the expenditure of government funds by that agency. The Coast Guard has recorded 42 cases of assistance at Oregon Inlet from 5 August 1983 to 11 January 1983; these groundings, for the most part, occurred during what is traditionally the calmest weather. In past years, the majority of groundings, whether on the ocean bar or on the inside channels which shoal as sediment is swept through Oregon Inlet on flood tides, have occurred during the winter fishing season and times of high northeast winds. Of these 42 cases, only 12 involved Dare County-based boats. Nine of these involved boats from out of North Carolina. (See Attachment III).

In comparing costs of dredging with hoppers to maintain the channel and costs of jetty maintenance and sand bypass, the corps has stated that the dredging effort it has already determined to be unfeasible (See Attachment I) as discussed above would also be too costly. Limberios Vallianos of the U.S. Army Corps of Engineers, Wilmington District, testified that the intensive dredging effort required to maintain project width and depth would cost $14 million a year. Any cost comparisons must be weighed against this figure, not against what the corps has been spending in recent years for efforts that have been inadequate. A memorandum sent from Major General John Wall, director of Civil Works, to the Assistant Secretary of the Army, shows that the estimated expenditures for FY 1984 on the Manteo (Shallowbag) Bay Project are $5.2 million, considerably higher than the $3.4 annual maintenance figure for sand bypass quoted by Mr. Hunter. (See Attachment IV).

Ken Hunter also writes (Page 2), "The wildlife refuge's beach is used by tens of thousands of people annually, just as though it were jurisdictionally a part of the national seashore."
THE FACT IS that while tens of thousands do use these beaches, including Dare County residents as well as visitors, tens of thousands of recreational boaters and sports fishermen also traverse Oregon Inlet for recreational fishing in the summer months. The charter fleet at the Oregon Inlet Fishing Center, Salty Dawg Marina and Pirate's Cove Marina numbers about 30 boats total. These boats make approximately 125 trips per year, carrying an average of six passengers aboard. In addition to these, thousands of private boat owners launch their boats at the Oregon Inlet Fishing Center while visiting Dare County on vacation. Yes, the wildlife refuge has miles of beaches, all of which are used by the public. But the public also appreciates sea access for recreational fishing, and these use Oregon Inlet in the same numbers as those who visit the refuge and use its beach.

Finally, we must address misconceptions of those who admittedly are not fishermen and have reported to you data about squid and fin fish landings which cannot be substantiated. Ken Hunter has called the years of 1979-82 "record years" for the fishermen of Dare County and northeastern North Carolina. It is true that fin fish landings in the 78-79 season, the 79-80 season and to a lesser extent, the 80-81 season showed promise of the resource which is waiting off our coast. But the 81-82 season also showed what the 82-83 season would hammer home: as access through Oregon Inlet lessened, so did fin fish landings in North Carolina as boats from other areas and states shunned the inlet and the harbor located a mere

15 to 20 miles inland from the fishing grounds. The North Carolina Division of Marine Fisheries is in the business of keeping fish statistics and their figures are documented and clear: finfish landings dropped in both pounds and value as the inlet condition worsened. The Division has its statistics broken by calendar year and by fishing season (September - April). Either way you look at it, the story is the same. Here are the calendar year landings from 1978 to 1982 for the northern district, offshore catch:

| | |
|---|---|
| 1978 - 16,211,000 pounds | $8,265,000 |
| 1979 - 22,954,000 pounds | $10,943,000 |
| 1980 - 22,676,000 pounds | $9,019,000 |
| 1981 - 23,362,000 pounds | $8,722,000 |
| 1982 - 14,304,000 pounds | $7,590,000 |

In looking at the Division of Marine Fisheries' statistics, it is important to separate the offshore, fin fish catch from the shellfish caught in interior waters which are not dependent on Oregon Inlet for access. Total landings including shellfish and fin fish caught in the sounds did rise in every year except 1981 and peaked in 1982 at 49,739,000 pounds. That figure seems impressive until you compare it with the 48,490,000 million pounds caught in both sound waters and offshore in 1980, and realize that offshore landings in the same period dropped by 8 million pounds. The majority of the catch, both in dockside value and pounds, was landed in waters that are not related to Oregon Inlet at all and cannot therefore be used as comppritive figures. The only record set in Dare County in 1982-83 as a result of Oregon Inlet was the state's highest unemployment: 42.1 Percent.

Lastly, we must set the record straight on squid. While it may be true that the volume of squid used in the corps of engineers earlier analysis was inadvertently overstated, it is definitely NOT TRUE to imply that squid do not exist in substantial numbers to make them a viable catch.

Four boats, based in Wanchese and fishing for squid from July 1983 to November, 1983, caught between 1 and 2 million pounds of squid. Unfortunately for the local economy, none of the squid was packed in North Carolina. And unfortunately for the national economy, many other boats interested in pursuing the squid fishery did not do so since they faced additional travel time and offloading costs by having to bypass Oregon Inlet and Wanchese Harbor and travel to another port. We understand that the foreign boats fishing for squid off the North Carolina coast caught their full quota well before the end of the squid season.

While the statements quoted above do not comprise all of the testimony given that we feel was in error, they do represent false information about a number of issues we felt it important to clarify for the committee. Building jetties at Oregon Inlet IS an emotional issue, certainly for those whose livelihoods are threatened by the unstable conditions prevailing now as well as (apparently) for some opponents of the project. It is still Dare County's contention that the project, and the facts of the case, speak for themselves. We again respectfully urge your consideration of these facts and your favorable report on this legislation.

ATTACHMENT I

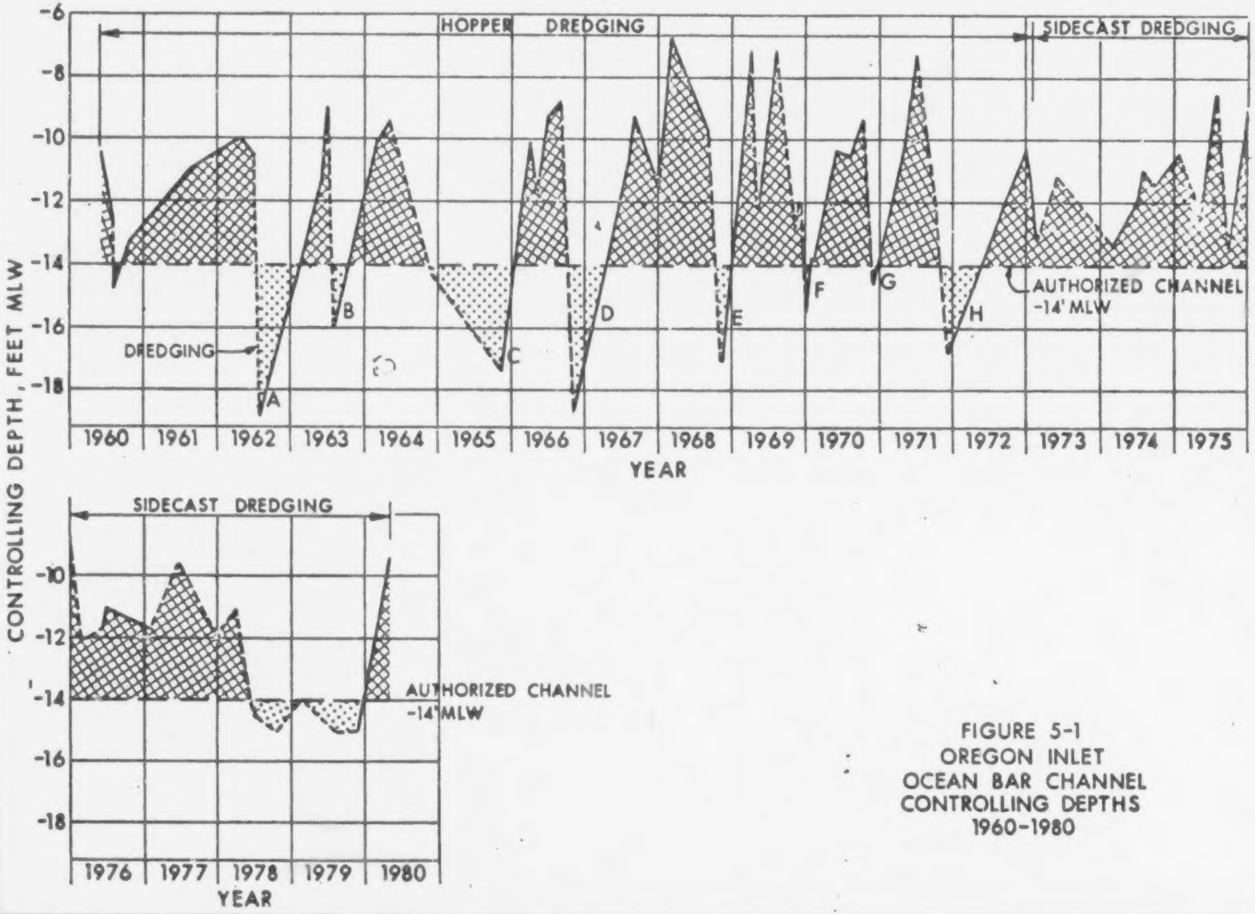

FIGURE 5-1
OREGON INLET
OCEAN BAR CHANNEL
CONTROLLING DEPTHS
1960-1980

ATTACHMENT II

## SUMMARY OF FINDINGS AND RECOMMENDATIONS

A comprehensive investigation was conducted to assess the feasibility of maintaining the authorized navigation channel through Oregon Inlet by floating dredge plant and with dredged-material disposal in the nearshore zone, paralleling adjacent beaches, as a means of sand bypassing and the prevention of dredging-induced beach erosion.

Findings. The dredging studies concluded that the authorized inlet channel having a project low water depth of 20 feet and width of 400 feet could under average wave conditions be maintained by a split-hull, trailer suction hopper dredge of the ATCHAFALAYA/MERMENTAU class having a loaded draft of 14.0 to 14.5 feet. With average conditions, the dredging/disposal operations would have to be performed on a continuous year-round basis with the total annual dredging volume amounting to approximately 1.45 million cubic yards. The analysis of dredging, based on average wave conditions, does not reflect the real possibility of short-term intense wave energy in combination with antecedent inlet shoal configuration, resulting in rapid inlet channel closure. Rapid closure occurred in the winter of 1981-82 and appears to be recurring in the current winter of 1982-83. Such events, though always possible, are indeterminant in terms of time because of the highly dynamic and unpredictable nature of inlets along sandy, high energy coastlines. Due to this problem, important harbor entrances of this type are invariably protected by jetty structures.

In regard to the capability of nearshore disposal to provide adequate sand bypassing and related beach nourishment, the investigation revealed that material deposited by the dredge plant in a minimum water depth of 17 feet would be dispersed onshore at an annual volume rate of transport amounting to 25 percent of a single year's volume (1.45 million cu. yds.) of dredged material. The disposal zone required to contain a single year's volume of dredged material would extend along a shore-parallel distance of 10,000 feet. Given the 25 percent annual rate of sediment dispersal, an overall shore-parallel disposal zone having a length of 40,000 feet would be required to conduct a continuous year-round dredging operation. With respect to shoreline behavior associated with the nearshore dredged material disposal scheme, the investigation found that severe erosion would occur along the northernmost 3 miles of Pea Island situated south of and adjacent to Oregon Inlet. In a short period of 16 years following implementation of the dredging/nearshore-disposal scheme, the northernmost 3 miles of Pea Island would be virtually destroyed. Damages to cultural development in that time period would consist of a loss of approximately 450 acres of land, destruction of 3 miles of N.C. Highway 12 including access to the bridge spanning Oregon Inlet, loss of the U.S. Coast Guard Station at Oregon Inlet, and loss of all facilities within the zone of erosion that are administered by the U.S. Fish and Wildlife Service. The time span of 16 years and associated erosion damages, referred to above, pertain only to effects directly attributable to the nearshore disposal scheme in the event of its implementation. These values do not reflect the added effects that would occur as a result of natural erosion which has existed for many years along the north end of Pea Island. Therefore, the destruction of the northernmost 3 miles of Pea Island would, in reality, occur in less than 16 years if the natural erosion were to be exacerbated by the dredging/disposal scheme being considered here.

Recommendations. Implementation of a dredging/nearshore-disposal scheme at Oregon Inlet, in an effort to improve navigation and prevent significant project related beach erosion, is functionally infeasible as it would result in catastrophic and unacceptable erosion along the northernmost 3 miles of Pea Island. Accordingly, it is recommended that no further consideration be given to the dredging/nearshore-disposal plan.

## ATTACHMENT III

| | NAME OF VESSEL | DATE/PLACE OF GROUNDING | POSIT | VSL HOMEPORT | GRU CASE/STA CASE |
|---|---|---|---|---|---|
| 1. | 68' p/c Fastback | 8/5/83<br>Old House Channel Junction Buoy | 35-46N<br>75-35W | Glastin Berry,<br>CT | 490/200 |
| 2. | 18' p/c White Caps | 8/16/83<br>Old House Channel Junction Buoy | 35-47N<br>75-35W | Hampton, VA | 521/219 |
| 3. | ACOE Dredge Schweizer | 8/17/83<br>North Side of South Channel | 35-45N<br>75-32W | Wilmington, NC | 522/220 |
| 4. | ACOE Dredge Schweizer | 8/29/83<br>North Side of South Channel | 35-45-40N<br>75-32-05W | Wilmington NC | 555/231 |
| 5. | 36' p/c Yellowbird | 9/12/83<br>Oregon Inlet Day Beacon 9B | 35-48N<br>75-35W | Alexandria, VA | 596/251 |
| 6. | F/V Frankie Marie<br>67' | 9/5/83<br>Oregon Inlet Bar | 35-46N<br>75-31W | Wanchese, NC | 575/245/Pt. Brown |
| 7. | F/V Margie | 9/5/83<br>Oregon Inlet Bar | 35-46N<br>75-31W | Wanchese, NC | |
| 8. | 34' p/c Armadillo | 9/26/83<br>Water Slough Day Beacon 8 | 35-48N<br>75-34W | Kill Devil Hills<br>NC | 624/268 |
| 9. | 23' p/c Ray-Zee | 10/9/83<br>Davis Slough | 35-46N<br>75-31W | Manteo, NC | 014/007 |
| 10. | 22' p/c | 10/15/83<br>Davis Channel | 35-45N<br>75-31W | Suffolk, VA | 026/013 |
| 11. | 74' F/V Cheryl Ann | 11/7/83<br>Oregon Inlet LT NR 8 | 35-45N<br>75-32W | Wanchese, NC | 069/026 |
| 12. | 73' F/V Hen Lee | 11/7/83<br>Oregon Inlet Buoy NR 8 | 35-46N<br>75-31W | Elizabeth City<br>NC | 070/027 |

| | NAME OF VESSEL | DATE/PLACE OF GROUNDING | POSIT | VSL HOMEPORT | GRU CASE/STA CAS |
|---|---|---|---|---|---|
| 13. | 24' Crab Boat | West Side H.C. Bonner Bridge<br>1/12/83 | 35-45-12N<br>75-32-20W | Wanchese, NC | 078/031 |
| 14. | 72' F/V Cheri Diane | 11/16/83<br>Oregon Inlet Buoy NR 8 | 35-46N<br>75-32W | Wanchese, NC | 087/034 |
| 15. | 69' F/V Venture | 11/18/83<br>Oregon Inlet NR 8 | 35-45N<br>75-32W | Oriental, NC | 090/036 |
| 16. | 65' F/V Eastern Shore | 11/19/83<br>Oregon Inlet NR 8 | 35-45N<br>75-32W | Oriental, NC | 091/037 |
| 17. | 23' p/c | 11/22/83<br>Davis Channel | 35-46N<br>75-31W | Wanchese, NC | 095/040 |
| 18. | 62' F/V Capt. Pete | 11/24/83<br>Oregon Inlet NR 8 | 35-45N<br>75-36W | Seafold, VA | 099/044 |
| 19. | 45' F/V Jubilee | 11/25/83<br>Old House Channel NR 7 | 35-48N<br>75-35W | Baybold, NC | 103/047 |
| 20. | 88' F/V Miss Planters | 11/28/83<br>Oregon Inlet NR 8 | 35-48N<br>75-32W | Wanchese, NC | 109/050 |
| 21. | 85' F/V God's Mercy | 11/29/83<br>Oregon Inlet NR 8 | 35-45N<br>75-32W | Hampton, VA | 112/052 |
| 22. | 72' F/V Cheryl Diane | 12/03/83<br>Oregon Inlet CH NR 8 | 35-45N<br>75-32W | Hobucken, NC | 116/056 |
| 23. | 80' F/V Capt. Stacy | 12/03/83<br>Oregon Inlet CH NR 8 | 35-45N<br>75-32W | Morehead City NC | 118/057 |
| 24. | 74' F/V Capt. Hudgins | 12/04/83<br>Oregon Inlet CH NR 8 | " | Oriental, NC | 119/058 |

| | NAME OF VESSEL | DATE/PLACE OF GROUNDING | POSIT | VSL HOMEPORT | GRU CASE/STA CASE |
|---|---|---|---|---|---|
| 25. | 104' Pledge Merrit | 12/04/83<br>Oregon Inlet Bar | 35-46N<br>75-31W | Wilmington, NC | 121/060 |
| 26. | 70' F/V Capt. Weddel | 12/06/83<br>Oregon Inlet LT 9 | 35-46-18N<br>75-32-42W | New Bern, NC | 124/061 |
| 27. | 67' F/V Miss Patsy | 12/06/83<br>Oregon Inlet LT 9 | " | New Bern, NC | 124/061 |
| 28. | 71' F/V Miller Time | 12/08/83<br>Roanoke Sound NR 12 | 35-49-41N<br>75-36-03W | Ft. Lauderdale<br>FLA | 127/063 |
| 29. | 86' F/V Amazing Grace | 12/20/83<br>Oregon Inlet LT 9 | 35-48N<br>75-35W | Wanchese, NC | 144/071 |
| 30. | 67' F/V Vicky | 12/22/83<br>Oregon Inlet Bar | 35-46N<br>75-31W | Wanchese, NC | 146/073/Pt Brown |
| 31. | 78' F/V 1st Commandment | 12/28/83<br>Roanoke Sound Channel | 35-49N<br>75-35W | Hobucken, NC | 157/074/Pt Brown |
| 32. | 76' F/V Brenda Kay | 1/1/84<br>Old House Channel NR 24 | 35-42N<br>75-38W | Wanchese, NC | 163/075 |
| 33. | ACOE Dredge Frye | 1/04/84<br>Oregon Inlet South Point | 35-45-03N<br>75-32-02W | Wilmington, NC | 170/081 |
| 34. | 76' Lois Joyce F/V<br>VESSEL SUNK | 1/6/84<br>Oregon Inlet CH Buoy 9A | 35-46-17N<br>75-32-30W | St. Augustine, FLA | 172/082 |
| 35. | 50' Tug Little Mary | 1/11/84<br>Old House Channel NR 21 | 35-45N<br>75-36W | Seaford, VA | 177/083 |

9 VESSELS HOMEPORTED OUTSIDE OF NORTH CAROLINA; 16 IN NORTH CAROLINA OUTSIDE OF WANCHESE
23 FISHING VESSELS

ATTACHMENT IV

2137-83

DEPARTMENT OF DEFENSE UNITED STATES OF AMERICA

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314

REPLY TO
ATTENTION OF:

DAEN-CWO-M

DEC 12 1983

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

SUBJECT: Expenditures on Manteo (Shallowbag) Bay, North Carolina, Oregon Inlet -- INFORMATION MEMORANDUM

The purpose of this memorandum is to provide you with the following expenditures for the subject project as requested in your memorandum, dated December 2, 1983.

Manteo (Shallowbag) Bay, North Carolina

| Fiscal Year | Expenditures | |
|---|---|---|
| 1984 | 5,252,800 | Estimated (actual expenditure thru November - $801,200) |
| 1983 | 4,270,170 | |
| 1982 | 2,204,476 | |
| 1981 | 1,847,785 | |
| 1980 | 1,230,064 | |
| 1979 | 831,926 | |

FOR THE CHIEF OF ENGINEERS:

JOHN F. WALL
Major General, USA
Director of Civil Works

MR. CHAUDHRY/272-0242
Typed by Gail M. Nevitt

COUNTY OF DARE
MANTEO, NORTH CAROLINA 27954

P O DRAWER 1000
PHONE (919) 473-2143

# TESTIMONY ON S. 1471 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

UNITED STATES SENATE

SUB-COMMITTEE ON WATER RESOURCES/ENVIRONMENTAL POLLUTION

FEBRUARY 6, 1984

By: Arvin A. Midgett
Charter Boat Operator and
Member of Dare County's Oregon Inlet Commission
Manteo, North Carolina

LAND OF BEGINNINGS

# TESTIMONY ON S. 1471 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT
UNITED STATES SENATE
SUB-COMMITTEE ON WATER RESOURCES/ENVIRONMENTAL POLLUTION
FEBRUARY 6, 1984

Mr. Chairman and Members of the Sub-Committee, my name is Arvin Midgett. I'm a charter boat operator from Oregon Inlet on the Outer Banks of North Carolina. I'm also a member of Dare County's Oregon Inlet Commission of Manteo, North Carolina. I know that I speak not only for myself and my charter boat friends but also for the hundreds of private and recreational boatman, small commercial fishermen and frankly all who use Oregon Inlet. The message that I would relate to you hardly needs five minutes to deliver ---- it's really very brief, and basic, but sincere .... WE NEED HELP!

We need your help because what has to be done to save us cannot be done by our group else we'd have completed it years ago with less effort, expense and study as has already been experienced;.... and certainly with less anguish.

Sportfishermen have been working out of Oregon Inlet for over fifty years now and they're still awaiting what may never come without your help ---- a safe, deep, wide inlet to pass thru to open sea. We learned' way back in 1970 that Congress had authorized proceedings that would eventually effect such an inlet, but, the time never comes .... and more than ever now, WE NEED YOUR HELP!

I operate my 46' sportfisherman out of Oregon Inlet Fishing Center just one mile North of the channel through the bar. Our inlet even now is very narrow and shallow; dangerous to the everyday, experienced boatman; deadly many times to the unsuspecting week-end type recreational vessel. There are about fifty other vessels from this same marina who share this passage to sea, not to mention the hundreds of vessels from other areas along the coast who come thru here. For us the proximity of Oregon Inlet to the best fishing grounds on the entire East Coast is vital. There simply isn't another inlet, save Oregon, from Hatteras Inlet up to the Norfolk, Va. area. If Oregon Inlet is impassable it will shut many of us down as we are equipped for relatively short, inexpensive, daily trips. Too, if our inlet is not improved over it's present conditions we can expect a lot of "lost days" due to it's being impassable. Further, the smaller recreational boatman will presently find only a limited use of this passage; if they are prudent.

Just yesterday morning I stopped my truck atop Oregon Inlet Bridge and looked out across the breakers of the bar and wondered just how much longer I'd be able to continue my profession. Again I share much of the dismay that must confront hundreds of other skippers as they look upon this scene.

We ask that you look favorably at what is proposed by S. 1471 . With all "things" considered we truly see no evil for anyone at what it plans. The deeping and stabilization of Oregon Inlet must have a start somewhere and we feel that this proposal should be that start .... FOLKS, WE NEED YOUR HELP!

# TESTIMONY ON S. 1471 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

UNITED STATES SENATE
SUBCOMMITTEE ON WATER RESOURCES
and
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION

February 6, 1984

By - Dan E. McDonald

DANIEL E. MCDONALD, P.E.
5420 ALPINE DRIVE
RALEIGH, N. C. 27609
(919) 876-3863

Mr. Chairman, Mr. Chairman and Members of the Subcommittees: I am Dan McDonald, a resident of Raleigh, North Carolina. I am a professional civil engineer, a retired officer in the U.S. Army Corps of Engineers, a retired employee of the State of North Carolina, and a part-time consultant. From 1976 to 1982, I served as the State's Project Manager on the Wanchese Harbor Development Project, with primary responsibilities for project funding, planning, design and construction. Because the Wanchese Harbor Development Project was integrally related to the Manteo (Shallowbag) Bay Project, my duties required that I maintain a working knowledge of the Manteo (Shallowbag) Bay Project.

I appreciate this opportunity to speak in support of S.1471 - a bill to authorize the Secretary of the Army to use certain lands in connection with the Manteo (Shallowbag) Bay Project, commonly referred to as the Oregon Inlet stabilization project.

The Congress authorized this project for design and construction in the Rivers and Harbors Act of 1970. Since that authorization, thirteen years ago, design has been essentially completed and partial construction has been accomplished. Further construction is stymied by the non-availability of certain lands required for project construction and maintenance. These lands are under the jurisdiction of the Department of the Interior, and this Department contends that it lacks the authority to permit the use of these lands for project implementation.

The position of the Department of the Interior was stated in a letter dated September 9, 1980 from the Assistant Secretary of the Interior for Fish and Wildlife and Parks to the Assistant Secretary of the Army (Civil Works). That letter included these three statements: (1) --- this Department is unable to issue permits to the Corps for the construction of a project that utilizes jetties"; (2) "We believe it is necessary for the Corps to obtain additional authorization from the Congress, including the appropriation of park and refuge lands, before this project may proceed", and (3) --- the most appropriate means of conflict resolution is further explicit action by the Congress".

S.1471 is consistent with the stated position of Department of the Interior. It proposes Congressional authorization for the Corps of Engineers to use the lands in question as necessary to implement the project authorized by the Congress in 1970.

Since 1977, there has been continuing argument concerning the Manteo (Shallowbag) Bay Project. Much of this argument has been on an emotional plane where objective analysis is barred. I want to address, in total objectivity, four basic questions that should form the central theme of all discussions:

1. Is there a public need for the project?
2. Will the project, as planned, satisfy that need?
3. Does the public need for the project, along with projected benefits, justify total project costs?
4. What impact will the project have on the environment, and how does this impact relate to project benefits?

The need for reliable navigation through Oregon Inlet, for the passage of both commercial trawlers and pleasure craft, has been clearly demonstrated. It has also been dramatically emphasized in the loss of lives and property. Commercial fishermen have proven the potential capability of Wanchese as a major seafood port. With reliable navigation through Oregon Inlet, commercial fishing operations at Wanchese will greatly expand, bringing significant economic benefits on a local, regional, and national scales. Without a navigable inlet, commercial fishing operations at Wanchese will virtually cease. Nationally, with the possible exception of the Pacific Northwest, our commercial fishing industry is in dire straits. While our nation continues to import a great percentage of the seafood we consume, we are largely neglecting our commercial fishing industry. Strengthening this industry is a national necessity. Support for the industry at Wanchese is an important step in the strengthening process. There is definitely a public need for a stabilized Oregon Inlet.

I am confident that the Manteo (Shallowbag) Bay Project, as planned and authorized, will, when constructed, satisfy the need for a stabilized Oregon Inlet. There is continuing argument on this question, much of which is apparently without foundation or validity.

The need for a stabilized inlet is of national significance and priority. The projected benefits are significant. The total project costs are high. There is no way to put these three facts into a computer and obtain a universally accepted answer to whether the need and benefits justify total project costs. We are saddled with questionable ground rules for arriving at a so-called benefit-cost ratio for the project. Regardless of what evolves from any computation of a benefit-cost ratio, the result will be challenged and probably argued in perpetuity. Rather than argue statistics, I prefer to advance the proposition that enhancement of the commercial seafood industry, which is a major objective of this project, is vastly more important to our nation's welfare than, for example, the doling of tractors to rice farmers in Vietnam (only to have the tractors mire and rust), or the pouring of dollars into comparable projects in other countries. The need to help our own people, in this case our commercial fishermen who are working hard to keep their industry alive, certainly transcends the need (if indeed a need exists) to give monetary sustenance to those in other countries throughout the world.

Although I am an an environmentalist in the true sense; i.e., I am dedicated to the protection and wise utilization of our natural resources, I am not qualified to engage in the academic rhetoric that seems to prevail among "professional environmentalists" in addressing this project. As a practical engineer, I view this rhetoric as being quite ridiculous, and I question the underlying reasons for such nonsense.

In summary, I would reiterate my conviction that the Manteo (Shallowbag) Bay Project, when constructed as authorized, will satisfy the need for a stabilized channel through Oregon Inlet, and that this need is of national significance and priority. This project is not a pork barrel, welfare or food stamp project. It is a project that will enable a goodly contingent of our nation's commercial fishermen to not only make a living for themselves but to also contribute materially to our nation's commercial fishing industry and to the economy in general.

Since 1977, there has been a crescendo of expressed opposition to the project, coming from various sources. This crescendo will probably continue with increasing intensity. This project offers a golden opportunity for members of the academic world to write papers and gain coveted publicity. It invites attack from groups and organizations hell bent on furtherance of their special interests in disregard of the public interest. I hope you will critically examine the real motives behind these expressions of opposition, and that you will test the validity of the arguments being advanced. Noah, in his ark building project, probably had to contend with such critics and wholesale criticism. But the ark was built, and Noah's severest critics probably had to admit that the project was sound and worthwhile.

I respectfully urge your approval of S.1471.

Thank you.

December 6, 1982

TALKING PAPER

SUBJECT: Manteo (Shallowbag) Bay Project, Dare County, North Carolina.

1. The Manteo (Shallowbag) Bay Project (commonly called the Oregon Inlet stabilization project) was authorized by the Congress in Public Law 91-611 (December 31, 1970) for construction substantially according to recommendations contained in House Document No. 91-303, 91st Congress, 2nd Session, April 8, 1970. The project was authorized to:

a. Stabilize Oregon Inlet with a dual jetty system.

b. Improve existing navigation channels through the inlet and on to Wanchese Harbor and Manteo (Shallowbag) Bay.

c. Enlarge and deepen the basin at Wanchese.

2. The authorizing document designated the Secretary of the Army, acting through the Chief of Engineers, as the responsible agent for implementing the project in accordance with the plans and subject to the conditions recommended by the Chief of Engineers.

3. Since authorizing the project, the Congress has made annual appropriations for planning and design. The Corps of Engineers has made extensive studies of the authorized project and the possible alternatives. General design work has been essentially complete for several years.

4. Since 1978, the Congress has appropriated a total of $13.9-million for project construction. Only one element of the project has been constructed. In 1979, the State of North Carolina enlarged and deepened the basin at Wanchese under a written agreement with the Chief of Engineers. The cost was $510,051, and the Corps of Engineers has reimbursed the State.

5. If so directed, the Corps of Engineers could, in a relatively short time, start construction on the major project elements (i.e., the jetty system and the navigation channels). Prerequisite to this construction, the Corps must obtain two permits - one from the National Park Service and one from the U.S. Fish and Wildlife Service (agencies within the Department of the Interior). These permits will grant the use of certain lands that are under the jurisdiction of these agencies and which are required for project construction.

6. The Department of the Interior has expressed its unwillingness to issue the required permits and has voiced continuing opposition to the project, as planned. (See Attachment #2) For more than four years, progress has been stymied by controversy between the Corps of Engineers and the DOI agencies. It is clearly apparent that the controlling bureaucrats in the Department of the Interior intend to kill this project -

not on the basis of its merit but principally to vent their wrath on the Corps of Engineers with whom they have historically feuded. So far, there has been no visible evidence of any effort by higher officials to correct this situation. Until order and control are established, the Oregon Inlet project will remain mired in a bureaucratic morass of perpetual "study" and bitter controversy. It is high time for those in authority to act firmly and decisively in bringing an end to this nonsense.

7. Stabilizing Oregon Inlet and improving the navigation channels to Wanchese Harbor are vital to the commercial seafood industry and essential for the protection of lives and property. Lives continue to be lost and trawlers destroyed in navigating these treacherous waters.

8. The cost of construction continues to skyrocket. In December 1970, when the project was authorized, the estimated construction cost was less than $12-million. The present estimate is more than $70-million.

9. This project is integrally related to the State's development of Wanchese Harbor as a major commercial seafood center. This harbor development was undertaken in response to a stipulation in the federal project authorization which required that the expanded harbor be developed and maintained by non-federal interests. The State has completed a $7.6-million project designed to develop the harbor in conjunction with the federal project. A stabilized inlet and reliable navigation channels are absolutely essential.

10. The Oregon Inlet project has been strongly endorsed by the State of North Carolina throughout several administrations. (Attachments 3, 4 and 5 are copies of letters from the present Governor to the President. They are typical of numerous letters from previous Governors and North Carolina representatives in Congress.) There is overwhelming support for the project among those who view it objectively, knowledgeably, and in balanced perspective.

11. There is significant opposition from special interest groups and from some members of the academic and scientific communities who speak and write with a self-assumed expertise that is largely figmentary. Apparently, within the federal bureaucracy, the noisy opposition from these sources has carried more weight than the quiet but firm support from sources that are charcterized by common sense and a high regard for the public interest.

12. There is a pressing need for forceful action by those in positions of authority to end bureaucratic squabbling and get on with the project.

5 ATTACHMENTS:
#1 - Project Location Map
#2 - Cy ltr Herbst to Blumenfeld
#3 - Cy ltr Gov Hunt to the President
#4 - Cy ltr fr Gov Hunt to Presiden
#5 - Cy ltr fr Gov Hunt to President

STATEMENT OF KEN HUNTER

BEFORE THE SUBCOMMITTEE ON PUBLIC LANDS AND NATIONAL PARKS
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

RE: H.R. 3082 -- TITLE IV.

Legislation that would:

Authorize the Army Corps of Engineers
To Use Public Lands at Oregon Inlet
In Cape Hatteras National Seashore
And Pea Island National Wildlife Refuge

.....To Build a Jetty Project that would:

- Ruin Miles of Public Beaches
- Be an Eyesore.....and
- Never Pay For Itself!

JANUARY 30, 1984

Make no mistake about it. Title IV. would authorize the Army Corps of Engineers to commit an aesthetic..... and environmental.....and fiscal atrocity.

Title IV. --the "beach destruction" rider-- should be struck from H.R. 3082, the "wetlands protection" bill. In doing this, the members of the Public Lands and National Parks Subcommittee also are urged to resolve to fight every attempt to get this rider (or its parent bill, H.R. 3288) moving again --whether in mark-up, in negotiations with other committees, in Rules, on the Floor or in Conference.

Consider Title IV. in the context of the Coastal Barrier Resources Act which the Ninety-seventh Congress enact[illegible] in 1982. This exemplary legislation welded environmental protection and fiscal restraint in pulling the federal government back from its misguided participation in development projects on undeveloped, unprotected barrier islands. To its credit, the Merchant Marine and Fisheries Committee gave primary leadership in the House to the barrier islands bill in 1981-'82, but now in 1983-'84 this same committee has reported out this utterly contradictory Title IV. The Title IV. rider would authorize a dinosaur project (both in size and sophistication) in a supposedly "protected" stretch of barrier islands -- including a section of the nation's first national seashore.

Cape Hatteras National Seashore was established and placed under the protective management of the National Park Service long before we had much of an idea of how contrary barrier islands can be in their almost perverse reaction to the efforts of man to make them stay where they "belong."

Now all sorts of evidence has been investigated and we have a much clearer understanding of the dynamic processes at work. So there is all the more reason to "protect" Cape Hatteras National Seashore. Yet even though we now know better, beaches there are at risk today because of this legislation which proponents would like to characterize as nothing more than a modest little clean-up of a technical defect in the jetty project's original 1970 authorization.

How fortunate we are that the old authorization was defective! From a scientific standpoint, 1970 was back in the "Dark Ages" of knowledge about barrier islands and probably few then suspected just how preposterous it would be for the Army Corps of Engineers to build jetties at Oregon Inlet.

Today the Army Corps' proposal has gone beyond the point of mere foolishness. It is downright offensive to good taste.....to reasonable environmental practice.....and to sound economics.

Think about what is happening at the north end of Assateague Island as the direct result of the Ocean City jetties. One would hope --and expect-- that Congress would never again support an authorization for any jetty project at any national seashore. Certainly Oregon Inlet must be declared "off limits" because all of the dynamic features which make barrier islands so unstable are intensified on the Outer Banks of North Carolina. The potential for havoc there is substantially magnified.

The issue of whether to proceed with construction of jetties at Oregon Inlet need not --nor should not-- wait on the outcome of years of protracted struggle in the Appropriations Committee. A resolute Interior Committee can --and should-- be decisive of the matter this year at the authorizing level by killing the Title IV. rider to H.R. 3082 along with its parent bill, H.R. 3288.

The Bodie Island stretch along the north segment of Cape Hatteras National Seashore is, of course, not the only beach at risk. The beach that runs southward from Oregon Inlet along the full length of Pea Island National Wildlife Refuge would be profoundly affected. Even beaches, both north and south, that are adjacent to somewhat distant private oceanfront property would be vulnerable to the accelerated erosion caused by the jetties.

The wildlife refuge's beach is used by tens of thousands of people annually, just as though it were jurisdictionally a part of the national seashore. Indeed, many visitors probably prefer the Pea Island beach as their first stop south of Nags Head because it avoids the people with four-wheel drive vehicles who have their own legitimate --and long permitted-- use of the Bodie Island beach on the north shoulder of Oregon Inlet. Probably a summer's survey would confirm that a majority of those who use the wildlife refuge's beach would respond with surprise when informed they were technically in a wildlife refuge.

Fortunately, the direct involvement of the national seashore (as well as the refuge) gives this subcommittee clear jurisdiction and we look to its members to halt the Army Corps of Engineers' plans which would lay waste to miles of public beaches on the Outer Banks, America's most classic example of a barrier island system.

You also would prevent a large economic waste.

The Corps' economic justification for this project is a shambles that, in all probability, is beyond hope of redemption. In September 1982, Army Assistant Secretary William R. Gianelli agreed I had uncovered "a fundamental error" in the Corps' original economic analysis. The Corps, according to my investigation, was left $400 million in the hole on the project's $600 million cost over 50 years of "project life."

A new analysis was promised by March 1983, but it remains unavailable for review and North Carolina press reports say it was sent back to the Wilmington, N.C. District three times. So nine months after due date, the Corps has yet to even offer a rebuttal to my investigation which exposed glaring errors and demonstrated the prospect that this project would waste hundreds of millions of dollars.

The Corps apparently has found it no easy task to rehabilitate a benefit/cost ratio that's been slashed to 0.34 to 1.0.

Even if the jetties would not be an eyesore.....and even if they would not ruin public beaches.....the project still should not be built on economic grounds alone. Perhaps the Corps eventually will come out with something that purports to "justify" the project, but the real question will remain as to whether it is bona fide.

Some members of the Public Lands and National Parks Subcommittee probably approached these hearings with the hope of finding some compromise that would "give something" to Representative Jones and his constituents who want the jetties built at Oregon Inlet. That's understandable. Of course, at the same time, you would want to preserve the integrity of Pea Island National Wildlife Refuge and Cape Hatteras National Seashore. Well ladies and gentlemen, it's too late for that. There no longer is any compromise to "give." That happens to be good news, however..... because the compromise already is in place. And so far it is working!

Something important --and encouraging-- happened at Oregon Inlet this Fall. The Corps of Engineers terminated years of resistance and contracted for use of a private hopper dredge. And as the T. L. James Company's Mermentau worked from September to New Years, succeeding profiles of the channel bottom confirmed the dredge was producing a far better channel than had ever been established by the little side-casting dredges that the Corps had used over the years.

It is particularly noteworthy that the hopper dredge was not commissioned to simply reestablish the old channel. Its assignment was to cut a brand new channel, and that means costs of future years' maintenance probably will run less than 1983's cost. (Most of the expenses of the hopper dredging would show up in the accounting for F.Y. '84.)

Yet even as work was proceeding on the Oregon Inlet channel and even as this winter's fishing season leaped off to a booming start, jetty proponents intensified their drumbeat of how dredging won't work and cannot provide a "permanent" solution. How any knowledgable person could believe anyone's promise of "permanence" to anything involving a barrier island system as dynamic as the Outer Banks is hard to understand. Of course a dredged channel would not be permanent! There never has been any question but that an effective dredging program geared toward maintenance of a serviceable channel will require a commitment to keep at it.

Many jetty proponents seemingly have not understood that the jetty system would be no different. Even if it worked the way the Corps says it would, extensive and repeated maintenance effort would be required for a jetty system to provide a serviceable channel through Oregon Inlet. That really is what the Corps was saying when, for starters, it budgeted three and a half million dollars a year for sand bypassing.

Just what is sand bypassing? Basically, it is a specialized kind of dredging by another name in another place. Its objective is to move sand that's collected outside one jetty around to the far side of the other jetty. The Corps agrees sand bypassing is essential to the success of the Oregon Inlet jetties.....and, at $3.4 million annually, the 50-year cost of $170 million for sand bypassing would substantially exceed the $100± million the Corps estimates would be spent in constructing the jetties in the first place.

But has the Corps, or the Oregon Inlet Commission or the local newspapers ever contrasted the $3.4 million proposed for sand bypassing with the lesser annual costs of dredging over the past decade? Don't kid yourself. It is doubtful whether they even have explained clearly what sand bypassing really is.....and the Corps' Feature Design Memorandum for the process is still missing. So don't expect the proponents to have made an examination and comparison of costs. Yet not until the hopper dredge worked Oregon Inlet this Fall has the Corps ever come close to spending for dredging what it proposes to spend on sand bypassing after the jetties are built.

Sand bypassing systems have a notoriously uneven reputation for effectiveness. Yet sand bypassing is a central article of faith in the proponents' litany. They exhibit no doubt but that sand bypassing would fully satisfy the apprehensions of those who cite poor performance at other jetty systems as a basis for their predictions that jetty-induced erosion will cause great damage to miles of public seashore on both sides of Oregon Inlet.

Proponents question neither the Corps' capability nor its commitment to protect one of this nation's most important stretches of recreational beach. We trust this subcommittee will not be so credulous.

Sometimes the Corps is the best witness against itself. For instance, please refer to page 82 of the Merchant Marine subcommittee's hearing record where last August Mr. Vallianos insisted the Corps had given "the question of maintaining adjacent beach areas.....coequal consideration.....to navigation.

Mr. Vallianos, Chief of the Wilmington District's Coastal Engineering Branch, repeated "coequal" for emphasis. So let's explore this matter of coequalness a bit.

Back in 1980 the Corps itself termed the sand bypassing system "essential." Back in 1980 the Corps itself said a sloped floating breakwater would be "the main component" of the bypassing system. Regarding this floating breakwater, the Corps said (Phase II., General Design Memorandum, page 24) it remained necessary to run some physical model tests, develop a numerical simulation model and conduct some unspecified "field deployment operations."

These steps, the Corps said, were required to evaluate the following:

1) Structural integrity;
2) Motion characteristics;
3) Mooring systems;
4) Wave suppression efficiency.

Can anybody here think of anything else anybody would need to know about a floating breakwater?

In 1980 the sloped floating breakwater--the "main component" of an "essential" system-- was apparently little more than a figment of the engineering imagination: undesigned, unbuilt and untested! If, in January 1984, that status has changed, it is a very well kept secret.

All the Corps had to show for this critical component was a artist's sketch of the floating breakwater. The rest was all promises made in apparent disregard of the Navy's and others' frustrating experience over many years in attempts to develop effective large-scale, long-lasting floating breakwaters. The 1980 General Design Memorandum is all future tense on page 24: "The development of the floating breakwater *will* involve an *extensive* engineering design effort....." Yet in this same document the Corps declared itself prepared to begin construction of the jetties as early as the following summer. Jetty construction should proceed, the Corps said, while any bugs in the floating breakwater concept would be worked out in a "Feature Design Memorandum."

Charles Peters of The Washington Monthly has observed how military types, in particular, seem prone to proceed from "can do" confidence into reckless disregard for the possibilities of failure. I suggest the Army Corps of Engineers has provided us here with a case in point, for if the floating breakwater could not be made to work right, then the whole sand bypassing operation would be in jeopardy. What then of the miles of public beaches which Congress long ago entrusted to the Department of the Interior?

Coequal consideration, Mr. Vallianos?

The Subcommittee on Public Lands and National Parks must recognize a critical distinction between the *two* purposes for sand bypassing.

As Mr. Vallianos suggested, one purpose is navigation. The other purpose is to avoid, or minimize, sand starvation of adjacent beaches. In his testimony before the Merchant Marine and Fisheries Committee Mr. Vallianos neglected to mention that accomplishment of these purposes would require different levels of effort and different frequencies of occurrence.

So be forewarned. Sand bypassing for navigation would require *less effort* and considerably *less frequent occurrence* than sand bypassing for the purpose of maintaining the integrity of the beaches of Pea Island National Wildlife Refuge and Cape Hatteras National Seashore.

Right from the beginning --just as soon as sand in the littoral drift is interdicted-- beaches downdrift from the jetties would begin to erode from sand starvation. That is why the scientists of the Inman Group said sand bypassing should be done continuously. The Corps has dismissed a continuous effort as impractical, and clearly such a program would be excessive to the requirement of navigation.

To avoid impairment to navigation, sand bypassing would be needed only after sand builds up so extensively outside one of the jetties that it spills around the jetty head and starts to clog the channel.

While the present proposal calls for an annual program, the Corps has signaled several times that it is not convinced sand bypassing would be necessary that often. Now when the scientists are saying continuous bypassing may be the only real hope for maintaining the integrity of the beaches, we must again ask Mr. Vallianos to explain his concept of "coequal consideration."

Note: several Inman Group members questioned whether even continuous sand bypassing could be effective over the long run, and Professor Orrin Pilkey, geologist at Duke University, can explain in detail why sand bypassing during winter storms is critical. (The Corps proposes that its annual program be conducted in the summer, but even though this might move an equivalent amount of sand as would ordinarily be moved in the winter, the "more practical" summer schedule would not effectively prevent or repair beach damage that occurs primarily during winter storms.)

So let's be realistic. The Corps probably will run the cheapest possible sand bypassing schedule geared to the less exacting purposes of navigation. Any benefits to the beaches that might result from this activity would be incidental.....and substantially insufficient. As George Deems of the North Carolina Beach Buggy Association puts it so pithily: "Gentlemen, you can kiss the beach goodbye!"

Sand bypassing systems have poor reputations for effectiveness and the one proposed for Oregon Inlet is clearly experimental. Surely the Interior Committee will not want to turn over a crown jewel of the national park system to the Army Corps of Engineers for an experiment!

If the Corps of Engineers is so eager to test its latest idea about how to avoid destroying beaches by bypassing sand around jetties, then I suggest they should take it to some area they have already screwed up. Like Ocean City Inlet at the north end of Assateague National Seashore.

According to Professor Stephen P. Leatherman, a barrier islands specialist in the Geography Department at the University of Maryland, several miles of the north end of Assateague Island will completely disintegrate around the Year 2000 as the direct result of less than 70 years of sand starvation. (The jetties there were built to secure a channel shortly after the inlet opened in a hurricane in the 1930s.)

The Corps' prospects for making a positive demonstration of sand bypassing might be better at Ocean City because the jetties are much smaller than those proposed for Oregon Inlet and the barrier island dynamics of the Delmarva Peninsula are less extreme than the Outer Banks.'

Why not see if the Corps can get something to work at Ocean City, Mr. Vallianos?

The issue of safety is perhaps the most difficult one for opponents of the jetties to deal with.

I do not blame the proponents for using its strong pull on the heartstrings. Nor do I blame them when they suggest we are callous.*

From their perspective --"if you really understood our situation"-- they cannot understand how we could worry about a little beach erosion when lives and livlihoods are at stake. Considerations of safety should outweigh even the most serious (and admitted) weaknesses of the Corps' economic justification. How much, one of the proponents asked at the Merchant Marine hearing, is a life worth? Those of us who do not reside in Dare County should, they imply, stand by silently while they lock-in the taxpayer to a $600 million commitment that never can be recovered.

Safety is a potent argument. It is also one that holds up best when not too closely examined.

A letter from an editor of National Fisherman prompted me to reexamine safety recently. My correspondent concluded that "basically all the fishermen want is a safe passage to the fishing grounds and back." I agree with his perception, but it is a tall order. The fishermen want something that is idealistic and probably unattainable on the Outer Banks. It would be more realistic to focus on "serviceability."

Serviceability, I believe, relates safety both to the practical prospects for commercial fishing in northeastern North Carolina and to the potential for an effective dredging program at Oregon Inlet.

A portion of my letter is inserted here to develop this point. As the following shows, there are reasons to think that jettieswould not significantly improve safety in navigation on the Outer Banks. Indeed, there are several ways in which casualties could increase --or be more severe-- if the jetties were built.

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* I myself have used the word "callous" when charging that the Corps' repeated refusal to contract for a hopper dredge may have been rooted in staff's reluctance to permit a demonstration that a more serviceable channel could be achieved without the jetties.

RESPONSE FROM KEN HUNTER

QUESTION FROM SENATOR ABDNOR

Some propenents of the project have maintained that since the hopper dredges cannot dump sand close enough to the shore, then the sand they dump is lost to the beach building system and that therefore the stepped-up dredging alternative results in increased shoreline erosion. Please comment.

In the first place, the Corps of Engineers has avoided addressing the "pump-out" capability of the modern hopper dredges --particularly the Mermentau and Atchafalaya. Either of these craft could place the sandy spoil from Oregon Inlet's channel directly on nearby beaches, if necessary.

This "pump-out" step would involve additional expense, of course, but it is disingenuous of the Corps to disregard this capability as though it did not exist --even though, in the real world activity of dredging the channel to a serviceable depth, pumping-out onto the beach probably would prove to be unnecessary.

There are at least two reasons why the dredging alternative would avoid increasing beach erosion even without resorting to the hoppers' "pump-out" capability.

1) It remains to be demonstrated that a sufficient quantity of sand cannot work its way back into the beach/littoral drift system if a near-shore placement program (along the lines suggested by the Department of the Interior) were implemented. Even if we accept the Corps' contention that only 25 percent of the sand a hopper might deposit at the 17-foot nearshore level would return to the system, that is a virtually irrelevant conclusion because:

2) The Corps' whole scenario for "catastrophic" erosion was based on its utterly invalid assumption that a 20-foot deep (by 400-foot wide) channel must be maintained by dredging at all times.

The realistic prospects of the area's commercial fishing industry --both present and future-- show that 20-foot channel depths are excessive for the size and types of fishing vessels that *already* have demonstrated Dare County (Wanchese) is --and can continue to be-- a viable fishing center *without* building jetties at Oregon Inlet.

*The entire sand budget calculation changes fundamentally*[*] as we shift to shallower depths. And the Corps, itself, has provided corroborating evidence that a 14-foot depth would provide a "serviceable" channel for the practical requirements of both local and non-resident fishermen who use the area. As discussed in Attachment III., this evidence was presented by the Corps in recent congressional testimony. (The more modest dimensions of a serviceable channel also could be something less ambitious than the "ideal" 400-foot width, but depth is by far the more critical factor.)

*When the objective changes from 20-foot depths to 14-foot depths, the costs of dredging and the prospects for increasing beach erosion are both dramatically reduced*. This is because, in conditions of wet, semi-suspended, flowing sand (such as presented by inlets between barrier islands), the *effort* required to dredge a deeper channel increases *exponentially*.

The Corps' own data[**] shows more than *four times* as much sand must be removed to maintain a 20-foot channel as a 14-foot channel.

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[*] This response does not test the validity of the Corps' conclusion that dredging to 20-foot depths would cause catastrophic erosion. It assumes, without agreeing, that this conclusion is valid, although preliminary effects of the 1983 hopper dredging (which achieved depths in excess of 20 feet) indicate the Corps' apprehensions may have been exaggerated.

[**] Attachment I. Table 1-5 of the Corps' *still unreleased (!)* Dredging Feasibility Study, January 1983.

The Corps' data indicates that, at 20-foot depths, *0 percent* of the sand would be able to pass by naturally. *All* (100 percent) of it would be trapped in the channel and have to be dredged from it to avoid clogging.

A diametrically different situation is presented by a 14-foot channel. Even assuming the ideal 400-foot width, *more than 75 percent* of the sand would be able to *pass by naturally*! *Less than 25 percent would be trapped in the channel and need to be dredged*.

The Corps' Wilmington, N.C. District spokesmen want everyone to believe it would cost *$14 million* annually to dredge Oregon Inlet. Without an explanation, this induces a major misapprehension, because, to run up that kind of tab, they must subscribe to their invalid assumption of a necessity for a 20-foot depth which involves removal of 100 percent of the sand in the beach/littoral drift system.

But at the serviceable channel depth of 14 feet, you would have to deal with only *25 percent* of the sand. *The rest --75 percent-- will take care of itself*. This 75 percent will not be trapped, according to the Corps. And if it is not trapped, then it will naturally remain in the beach/littoral drift system.

Because a 14-foot channel depth requires removal of only a fourth of the amount of sand as must be removed from the $14 million 20-foot channel, then dredging costs for a 14-foot channel are one-fourth that of a 20-foot channel.

To dredge a serviceable 14-foot channel would cost about *$3.5 million annually* --*NOT* $14 million!

That produces a *savings difference of $10.5 million* annually.

It is this $3.5 million for a 14-foot channel --NOT $14 million for a 20-foot channel-- that should be compared to the Corps' estimate of $12 million in annual costs for the jetties.

At $3.5 million annually for dredging, there is a $175 million cost over 50 years. The savings difference is $425 million below the 50-year jetties project "life cost" of $600 million that the Corps estimates.

This is the critical comparison: $175 million for dredging (to 14 feet) vs. $600 million for the jetties and their unnecessarily deep (20 feet) channel.

Other comparisons also are useful, however.

For instance, the $3.5 million for annual dredging ($175 million over 50 years) seems a virtual standoff with the $3.7 million the Corps now estimates for sand bypassing ($185 million over 50 years). Sand bypassing is simply a specialized name for dredging by another name in another place --but that occurs AFTER $100 million has been spent to build the jetties and after the taxpayer is locked-into amortization and other costs in addition to sand bypassing.

Also compare the $175 million for dredging over 50 years with just the initial construction cost of $100 million. By dredging, we could extend this initial "first cost" beyond the 25-year, half-way mark, and at the same time completely jettison the amortization, sand bypassing and other costs involved with the jetties.

It is not as though there were anything new about asking the Corps to focus on a 14-foot channel. In 1982, the Senate Appropriations Committee made precisely this request in its Report for the 1983 Energy and Water Development Appropriation bill. The Corps' response is long, long overdue, and I suggest its failure to respond approaches sheer defiance.

The truth is certain staff at the Corps' Wilmington, N.C. District wants to build these "monuments to the Gods of Engineering" in the worst way. They do not want to consider anything less.

When natural processes will handle 75 percent of the sand, the real world problem of keeping a serviceable channel open at 14 feet is much more manageable.

Not only are dredging costs reduced to one-fourth of the $14 million for the 20-foot channel, but there also is a corresponding reduction in the concern we must have about the ultimate destination of the sand that is so critical to beach maintenance.

The dredging objective of 14-foot depths begins three-quarters of the way home! It begins with the expectation that three-fourths of the sand in the beach/littoral drift system will be unaffected by the dredging activity because it will not be trapped in an unnaturally deep channel.

The Corps' "catastrophic" erosion scenario assumed 100 percent --not 25 percent-- of the sand in the beach/littoral drift system would be trapped by the very unnatural 20-foot deep channel. A key element to this worst case scenario was that fully loaded hopper dredges would be able to release their loads in water no shallower than 17 feet. This nearshore placement would not be near enough because, the Corps said, sand from 17-foot depths would not find its way back into the littoral drift in sufficient quantities. Only about 25 percent of it would return, the Corps said. And, because with a 20-foot deep channel, essentially all of the sand in the beach/littoral drift system would be involved, the 25 percent recovery rate would lead to "catastrophy."

If, however, you are establishing a 14-foot channel, then you already are keeping 75 percent in the beach/littoral drift system right at the start. So if you recapture a quarter of what is dumped at the 17-foot level, you boost sand retention to over 80 percent of what was originally in the beach/littoral drift system.

The 17-foot spoil sites presuppose full load operations of the hopper dredge. On first impression it would seem inefficient to operate at less than full load capacity, but actually there is a time when partial loading is efficient and even necessary. That is when the hopper is establishing a "pilot channel" through shallow waters, and there is no reason why a partially-loaded hopper engaged in establishing a pilot channel should not release its spoil in 12-14-foot depths from which a larger percentage of the sand would be reintroduced into the beach/littoral drift system.

Once the pilot channel is established, full loads should be placed as near to shore as possible. If that is no better than the 17-foot level, so be it. While any loss of sand must be a matter of concern, I suggest we should be willing to take our chances and see what happens and what, if anything, needs to be done about it.

Bear in mind that a "normal" amount of "erosion" must be expected as part of the natural, on-going process that we call "migration" of barrier islands. With sea level on the rise, "migration" is absolutely essential to the long-term existence of these unstable, but critically important landforms which, when left alone, adjust themselves to the forces of weather, currents and sea level. (Commonly we describe them as being in a state of "dynamic equilbrium.")

A hopper dredging program that has the objective of a 14-foot channel would, if implemented as outlined above, allow 75 percent of the sand to stay in the beach/littoral drift system. Intelligent placement of the spoil would allow reintroduction of some, if not most, of the remaining 25 percent of the sand that would have to be removed by the dredge. Overall, 80-90 percent of the sand either would stay in, or be reintroduced to, the beach/littoral drift system.

So the difference is huge between the 20-foot channel which the Corps says would lose 75 percent of the beach system's sand and the 14-foot channel which would probably lose 10-20 percent.

Clearly the 14-foot channel places the barrier islands at Oregon Inlet well on the safe side of "catastrophic" erosion.

While a 10-20 percent loss of sand is a matter of concern, this must be contrasted with the kind of beach damage that almost surely will be caused by the jetties --even if (please note) the sand bypassing system works almost as well as the Corps of Engineers wants us to believe.

Please also note that the jetties are designed to trap 100 percent of the sand in the littoral drift. The jetties' effect, then, is essentially the same as the 20-foot channel. All of the sand will be intercepted. All of the sand must be removed artificially. The sand bypassing system is "essential" the Corps agrees.

But sand bypassing systems have a very uneven reputation for effectiveness. On top of that, there are very experimental features to the sand bypassing system proposed for the Oregon Inlet jetties. It would be reckless to risk the beaches of Cape Hatteras National Seashore to so untested and so unproven an approach. (The beaches of Pea Island National Wildlife Refuge, which are very jeopardized by this project, are used by the public as though jurisdictionally they were a part of the national seashore. Many users no doubt do not realize they technically are on a wildlife refuge.)

But let us assume the sand bypassing system will perform reasonably well. It still is inconceivable that the jetties will not cause loss of at least 10-20 percent of the sand.

And the risks of losing substantially more than 10-20 percent run unacceptably high.

Failure of the sand bypassing system is a real possibility. With failure, the erosion would unquestionably take on catastrophic dimensions.

If catastrophic erosion did result from dredging a 20-foot deep channel, one of the most obvious options would be to just stop dredging. (At least to that depth.)

With the jetties, the options are more limited and even less attractive. Do you remove the jetties? An unlikely, last resort ("fat chance") remedy. More probably you will incur colossal cost overruns in trying ever more desperate remedies --and still wind up losing miles of these priceless public beaches.

But assume once again that the sand bypassing system works as well as its designers hope. There _still_ is a fundamental problem with it. _Sand bypassing cannot be done when it most needs to be done_. That is during the big winter storm. The high wave energy event.

The Corps proposes to bypass the year's build-up during the lower wave energy summer months. (Never mind disruption to the seashore's peak visitation period.)

Even if sand bypassing during the summer manages to move the same net amount of sand as would have been done naturally over the course of a year (mainly in the winter), the basic structural integrity of the beaches will be weakened systematically over succeeding winters as the battered beaches are sand starved when they need sand the most. No matter how technically effective a summer sand bypassing program may be, it cannot possibly make things whole and an acceleration in the "natural" rate of erosion is inevitable.

Both the jetties and the 20-foot dredged channel pose a condition wherein 100 percent of the sand will be trapped and must be removed by some kind of dredging process. The potential for drastic consequences is much greater for both the jetties and the 20-foot dredging alternative. For both of these, the "sand loss/success-failure continuum" ranges from 0-to-100 percent.

In contrast, the total sand loss possible from the "worst case scenario" of the 14-foot dredging alternative would register only "25" because the "sand loss/success-failure continuum" extends only from 0-to-25 percent.

If it should appear, over time, that dredging the serviceable 14-foot channel still causes unacceptable levels of erosion, then consideration should be given to revising the program. Even at the expense of efficiency, perhaps the hopper dredge should operate with a greater number of partial loads so that more sand can be deposited in shallower nearshore waters. Or its pump-out capability should be used. Or some combination of these approaches.

Frankly, I seriously doubt any of these corrective approaches will be necessary.

In any case, it is clear that dredging a 14-foot channel cannot cause "catastrophic" erosion.

It seems reasonably clear that, with intelligent placement of the spoil, the quantities of sand that will be lost to the beach/littoral drift system will probably turn out to be insignificant.

Therefore, intensified dredging --aimed at providing a "no frills," but nevertheless truly serviceable channel-- will not significantly increase shoreline erosion. (The hopper Mermentau produced such a channel for the 1983-84 winter fishing season. It held up very well.)

Now that the Mermentau has demonstrated a 14-foot-plus channel can be maintained through a winter's fishing season, there is very little about a 14-foot channel that is still left to theory.

We have had a 14-foot-plus channel through Oregon Inlet all through the winter of 1983-84, thanks to the hopper dredge.

Most importantly, we know from the actual performance of the fishing fleets over the past six years that 14 feet really is the depth of serviceability for the present needs of the users of Oregon Inlet.

And in recent testimony, the State of North Carolina just made public its statistical projections for increased catch that, contrary to the state's interpretation, strongly suggests that the 14-foot depth also is practical for the future requirements of the area as well.

The testimony of James A. Summers, North Carolina's Secretary of Natural Resources and Community Development, was presented in writing to the Environment and Public Works subcommittees, although Mr. Summers was not present. The following day he personally repeated this testimony for the House Public Works subcommittee.

As developed more completely in Attachment II., the state's expectations that the jetties would foster a 20-25-million-pound increase in fish landings is a sharp cutback from the 70-144-million-pound projections made by the Corps in the now discredited "nontraditional" fish (squid, etc.) scenario of its old economic analysis.

It is not particularly important that Secretary Summers was not clear whether the state's new projections involved "nontraditional" fish or "traditional" fish or some mixture of the two. Perhaps some of the 20-25 million pound increase can be realized when more intensive dredging gives the area a more consistently reliable 14-foot deep channel. But if this predicted increase is wholly dependent upon building the jetties, then it still is not worth the expense.

The point is this: If catches of fish ranging up to 144 million pounds annually above non-jetty levels was barely sufficient to lift the project's economic justification above the break-even point, then surely the less fanciful present expectation of a 25-million-pound increase is far from adequate to justify proceeding with this $600 million project.

On the other hand, as developed in Attachment III., the recent hearings in the House elicited the confirmation that three of the top four record-setting years were years in which the channel through Oregon Inlet was not even at 14-foot levels.

As I have documented elsewhere, these catches of "traditional" fish species are all the more impressive because they range from 10 to almost 20 million pounds ABOVE what the Corps had predicted the fishermen would land of these species AFTER the jetties were built.

Landings of "traditional" fish, the Corps said, would average 22.5 million pounds AFTER the jetties were built.

Yet the all-time record of 41 million pounds was established in 1980. That was a year in which, according to a Corps of Engineers graphic displayed to the House subcommittee, the channel depth was shallower than 14 feet.

Similarly, the second-highest year, 1981, with landings totaling 39 million pounds. The Corps' graphic showed depths of less than 14 feet.

Similarly, the fourth-highest year, 1982, with landings totaling 32.5 million pounds. The Corps graphic showed depths of less than 14 feet.

Only during the third-highest year, 1979, did the Corps' graphic show a channel running deeper than 14 feet. Landings that year were 35 million pounds.

There are two points here. First, the catch of flounder, seatrout and other "traditional" species was, for four years running, far above the level of catch for these species that the Corps had predicted for AFTER the jetties were built. Second, the Corps' graphic shows that at no time during three of those four years was the channel ever at 14-foot depths.

So the bottom line is this: It simply is not credible for jetty proponents to insist, as they do, that vessels in current use require a 20-foot deep channel. The records the fishermen already have established far exceed the old expectations for the kinds of fish they can realistically be expected to catch.

These records are on the books. They are recent history. And there is no reason why they cannot be duplicated, or even exceeded.

WITHOUT jetties.

WITH ONLY a serviceable, 14-foot deep channel.

ATTACHMENT I.

TABLE 1-5

Filling Indices and Volume Ratios for Various Navigation Channel Depths in Oregon Inlet

| Channel Depth Low-Water Datum (ft) | Natural Depth of Ocean Bar at Mean Tide Level $d_1$ (ft) | Channel Depth at Mean Tide Level $d_2$ (ft) | Unit Width Flow Areas $d_1^2$ (ft $^2$ | Unit Width Flow Areas $d_2^2$ $(ft)^2$ | $E_{\Delta T}$ (ft-lbs) | $F_w$ (ft-lbs) | $D_R$ | $\frac{E_{\Delta T} \cdot F_w \cdot D_R}{10^{14}}$ $F_I$ $(ft\text{-}lbs)^2$ | $V_R$ (%) |
|---|---|---|---|---|---|---|---|---|---|
| 9.5 | 10.5 | 10.5 | 110.3 | 110.3 | 0 | $126.19 \times 10^6$ | 0 | 0 | N/A |
| 10.0 | - | 11.0 | - | 121.0 | $4.17 \times 10^6$ | - | 0.02 | 0.1 | N/A |
| 11.0 | - | 12.0 | - | 144.0 | $12.47 \times 10^6$ | - | 0.07 | 1.1 | N/A |
| 12.0 | - | 13.0 | - | 169.0 | $18.50 \times 10^6$ | - | 0.12 | 2.8 | 13.6 |
| 13.0 | - | 14.0 | - | 196.0 | $23.29 \times 10^6$ | - | 0.17 | 5.0 | 17.3 |
| 14.0 | - | 15.0 | - | 225.0 | $27.15 \times 10^6$ | - | 0.22 | 7.5 | 27.6 |
| 15.0 | - | 16.0 | - | 256.0 | $30.32 \times 10^6$ | - | 0.27 | 10.3 | 30.7 |
| 16.0 | - | 17.0 | - | 289.0 | $32.94 \times 10^6$ | - | 0.32 | 13.3 | 42.4 |
| 17.0 | - | 18.0 | - | 324.0 | $35.13 \times 10^6$ | - | 0.37 | 16.4 | 59.4 |
| 18.0 | - | 19.0 | - | 361.0 | $36.99 \times 10^6$ | - | 0.41 | 19.1 | 79.6 |
| 19.0 | - | 20.0 | - | 400.0 | $38.57 \times 10^6$ | - | 0.46 | 22.4 | >100.0 |
| 20.0 | - | 21.0 | - | 441.0 | $39.94 \times 10^6$ | - | 0.51 | 25.7 | - |
| 21.0 | - | 22.0 | - | 484.0 | $41.13 \times 10^6$ | - | 0.56 | 29.1 | - |
| 22.0 | - | 23.0 | - | 529.0 | $42.16 \times 10^6$ | - | 0.61 | 32.5 | - |
| 23.0 | - | 24.0 | - | 576.0 | $43.06 \times 10^6$ | - | 0.66 | 35.8 | - |
| 31.0 | - | 32.0 | - | 1024.0 | $47.53 \times 10^6$ | - | 1.05 | 63.0 | - |
| 32.0 | - | 33.0 | - | 1089.0 | $47.87 \times 10^6$ | - | 1.10 | 66.4 | - |

error at the 14-foot level [the only number that is NOT Exponential]

too high

22.6 ??

↑

Corps has confirmed 22.6

NATIONAL WILDLIFE FEDERATION
1412 Sixteenth Street, N.W., Washington, D.C. 20036 202—797-6800

STATEMENT OF EDWARD R. OSANN
DIRECTOR, WATER RESOURCES PROGRAM
NATIONAL WILDLIFE FEDERATION

ON S. 1471
MANTEO (SHALLOWBAG) BAY PROJECT

BEFORE THE
SUBCOMMITTEE ON WATER RESOURCES
AND THE
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
COMMITTEE ON ENVIRONMENT & PUBLIC WORKS
UNITED STATES SENATE

FEBRUARY 6, 1984

My name is Edward Osann. I am the Director of the National Wildlife Federation's Water Resources Program. The Federation, with over 4 million members and supporters nationwide, is America's largest conservation organization. During the past decade, our membership has adopted more than 50 resolutions establishing Federation policy on various aspects of water resource conservation and development. The Federation and its affiliates have a history of working with state officials and the Federal construction agencies to resolve differences over water projects or policies. We have commented on scores of water projects; we have litigated numerous times as well, in those instances where earlier efforts to resolve differences have failed. We have committed substantial time and effort to the initial development--and now the defense--of the Water Resources Council's procedures for the planning and evaluation of Federal water projects. We have strongly supported legislative efforts, on both appropriations and authorizations, to redirect the Federal water resources development program.

Mr. Chairman, I appreciate the opportunity to present testimony to the Subcommittee this morning on legislation dealing with Oregon Inlet, North Carolina. This bill would make lands available within the boundaries of the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge to the Army Corps of Engineers for use in the construction of an inlet stabilization project known as Manteo (Shallowbag) Bay.

The Federation is opposed to passage of this bill. It would set a dangerous precedent in opening up national park lands to preemption by various branches of government, and is clearly incompatible with the purpose of establishing these valuable protected areas.

In addition, the Corps' proposed inlet stabilization for which these lands are to be taken has been the object of much criticism since its original authorization in 1970. Acknowledging a "fundamental error" in its benefit-cost analysis, the Corps is preparing a new, as yet unreleased, study. In our view, enactment of this legislation would be inappropriate, since it would clear the way for a costly and environmentally-damaging project whose basic economic feasibility has yet to be established.

The idea that man-made structures can cost-effectively stabilize the Atlantic's shifting coastline is not compatible with current scientific opinion. A 1981 position paper prepared by nine prominent coastal geologists and signed by over 80 concerned scholars declares, "American taxpayers are paying huge sums of money" to protect the interests of "a relative few." "Stabilization of most American shores," they conclude, "is not justifiable in the broader scope of national interests."

This holds especially true for the proposed jetties at Manteo Bay, on a part of the Atlantic coast considered by coastal geologists to be extremely volatile in terms of storms and shifting barrier islands. Jetties are known to interrupt littoral migration of sand, requiring elaborate sand bypassing systems to replenish "downdrift" beaches. The Corps proposes an offshore bypass facility, protected by a massive floating breakwater, to bypass an estimated 531,000 cubic yards of sand annually.

There are several existing sand bypass facilities on the East Coast, but all are in less dynamic areas, and none are of the scale proposed at Manteo Bay. Few of these facilities have performed as expected. At Masonboro Inlet, North Carolina, for example, the channel has migrated into the deposition basin and up against the north jetty, requiring further construction and dredging. Two years after the completion of jetties and a sand bypass facility at Perdido Pass, Alabama, poor performance of the system required renewed dredging. Despite a functioning bypass system at Hillsboro Inlet in Florida, erosion on the downdrift beach continues.

At nearly $7 per cubic yard, the Corps' annual sand bypass budget for the Manteo Bay Project is more than three times that of the most expensive of the aforementioned projects. Yet there is no more reason, and possibly less, to believe that such a system will successfully mitigate the devastating effect that the jetties could have on the neighboring shoreline. Once constructed, these mile-long jetties may so disturb the natural
[illegible]
evolution of the shoreline as to decimate portions of the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge.

The Federation recommends that the Committee assess the effectiveness of the $2 million dredging program for the inlet which was recently funded by Congress, rather than enacting the proposed legislation at this time. The National Wildlife Federation continues to support the maintenance of renewable fishery resources and a viable commercial fishing industry. Unfortunately, the Manteo Bay Project is a most questionable and costly means of achieving this objective.

Thank you for the opportunity to present these views.

The News and Observer, Raleigh, N.C., Thurs., Sept. 8, 1983

The News and Observer

*I advise and enjoin those who direct the paper in the tomorrows never to advocate any cause for personal profit or preferment. I would wish it always to be "the tocsin" and to devote itself to the policies of equality and justice to the underprivileged. If the paper should at any time be the voice of self-interest or become the spokesman of privilege or selfishness it would be untrue to its history. — JOSEPHUS DANIELS. Editor and Publisher 1894-1948*

***This newspaper's opinion***

# Shallow case for the jetties

For the time being, intensified dredging at Oregon Inlet remains the best bet to maintain a fishing industry in North Carolina's Northeast and to reduce danger to ships and their crews.

The proposed attempt to keep sand out of the treacherous inlet by extending rock-and-concrete jetties into the Atlantic Ocean from Bodie and Pea islands remains an unconvincing scheme to alter the forces of nature.

Oregon Inlet was no deep channel when North Carolina fishermen switched from shallow-draft boats to larger fishing vessels almost 25 years ago. Dredging by the U.S. Army Corps of Engineers began there in 1960 to deepen the channel only after local fishermen bought bigger trawlers to compete with out-of-state vessels. The constant battle with the sea's movement of sand into the inlet has gone on ever since.

That battle escalated in 1970 with conception of the proposed Manteo (Shallowbag) Bay Project, which includes the jetties, then estimated to cost about $11 million. Construction has been stalled by environmental, cost and feasibility objections. Congress has appropriated almost $16 million for the project over the years, but most of it has been diverted to other projects.

Current efforts by the Corps of Engineers to provide safe passage through the inlet by using a hopper dredge deserve a fair try. If those efforts fail to keep open a consistently safe channel, the key question still is whether a deep-trawler fishery can be maintained nearby. After all, the inlet is marked by the most severe wave action on the Atlantic coast, where ocean storms are relentless and where nature has shown no signs that it will be defeated permanently.

The $100 million-plus cost of the jetties today isn't necessarily excessive contrasted to some public works water projects, especially in the Western United States. But the project has to be justified as something more than a maybe-it-will-work alternative to dredging. Here are a few of the drawbacks:

- Turbulent ocean conditions that affect the depth of Oregon Inlet and shift the sand of barrier islands nearby aren't duplicated anywhere else in the world. To supplement the jetties, the U.S. Army Corps of Engineers proposes to use a breakwater system and sand-bypassing operation that are unproven and only partially tested.
- The Corps has yet to come up with a cost-benefit ratio for the project that it can defend. The first study it offered was fundamentally in error. A second is not promised until December.
- Land that the Corps wants to take from the Interior Department to provide bases for the jetties would reduce beaches of the Cape Hatteras National Seashore Park and the Pea Island Wildlife Refuge. Marine geologists warn that changing the natural movement of the ocean may cause severe erosion on other barrier islands.
- Even if the jetties remain stable and the sand trapped by the north jetty can be successfully moved by undersea pipeline to Pea Island on the south, no one knows how the obstructions may affect waters that surge inland during a major storm. One marine scientist, Dr. Orrin Pilkey, has speculated that impeding the flushing action of the sounds could cause the water to cut through land elsewhere, possibly in the Nags Head area.

No North Carolinian is without sympathy for the families of the nine fishermen who, since 1969, have lost their lives in the dangerous inlet. The loss of valuable trawlers, loss of business in the state fishing industry and the dimmed outlook for the Wanchese Seafood Industrial Park are depressing as well. But Rep. Walter Jones, Sen. Jesse Helms and Governor Hunt stand on soft sand in pushing for a project yet to be justified economically.

**NORTH CAROLINA BEACH BUGGY ASSOCIATION, INC.**

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United Mobile Sportfisherman, Inc.
National Coalition for Marine Conservation, Inc.
Member International Game Fish Association, Inc.

February 14, 1984

Hon. John H. Chaffee, Chairman
Subcommittee on Environmental Pollution
Committee on Environmental and Public Works
Hart Senate Office Building - Room 408
Washington, DC 20510

Re: Oregon Inlet, North Carolina
Senate Bill 1471
Hearing February 6, 1984

Hon. James Abdnor, Chairman
Subcommittee on Water Resources
Committee on Environment and Public Works
Hart Senate Office Building - Room 508
Washington, DC 20510

Dear Senators Chaffee and Abdnor:

We wish to thank both of you for the opportunity to testify in opposition to Senate Bill 1471. We thought the hearing was handled in a very proper manner, however I feel I should make the following statements:

1. Since the hearing was held, I was greatly disturbed to find that the two maps used by the Corp of Engineers were approximately seven years old and in my opinion did not show the correct location of the alternative dredging now being carried out. We have marked the 3rd jetty design as to where we believe the correct position of the present dredging to be. See attachment No. 1.*

2. The Corp of Engineer's charts on Depth of Dredging show clearly that the hopper dredge Mermentau dredged a very good channel in four months, what the side-caster dredges could not do in approximately ten years!

3. Unemployment in Dare County, North Carolina was stated as being 40+%. The attached article from the Dare County, North Carolina Coastland Times dated February 2, 1984, stated that unemployment was 14.4% in December 1983 per the State of North Carolina Employment Security Commission. The 40+% must have been back in 1982-1983 when building construction was virtually non-existant. See attachment No. 2 *

4. In testimony given by Harry Brinkley Schiffman which was stated as follows: "I have come across some additional economic information ... 3,000 boats x 14 trips = 42,000 x 4 people = 168,000" the source of this information was not given and should be obtained. Secondly, did these boaters use the Oregon Inlet ocean channel or go to the bridge and drift back into the sound as is so often the case? Ocean going sports vessels are relatively few in number when compared with recreational boats that use the sound and have no need for jetties. Thirdly, to provide facilities for "336,000 or well over ½ million boat trips per year"

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*The attachment referred to have been retained in committee files.

would require the expenditure of millions in taxpayer's monies in view of the fact the present limited facilities would have to be greatly expanded from the standpoint of launch ramps, parking lots, public conveniences, and so forth all of which would necessitate the use of federal lands in the Cape Hatteras National Seashore. See attachment 3. *

5. The support in North Carolina for the Oregon Inlet jetties is not as great as a few would try to lead others in believing. In fact we know of no prominent North Carolina papers that support the project. Only two local papers in Dare County, North Carolina, home of the proposed project, support jetty construction. Even proponents lament the lack of support by the prominent members of the North Carolina press. This is a matter of public record. See Virginia-Pilot dated December 23, 1983.

We believe that hopper dredging, properly funded, will provide a safe and adequate channel for fishermen, thus saving taxpayers millions and at the same time protecting the environment of the Outer Banks of North Carolina.

We respectfully request that this letter be included in the record of the hearing held February 6, 1984, as the position of the North Carolina Beach Buggy Association.

Sincerely,

Geo. C. Deems

George C. Deems
Immediate Past President and
Chairman Government and Affiliated Affairs

GCD/lcs

Enclosure

Mailing address until April 1, 1984:
416 Sleepy Hollow Road
Richmond, Va. 23229

*Retained in committee files.

Testimony Delivered by Secretary James A. Summers
North Carolina Department of Natural Resources
and Community Development
Before the Subcommittee on Water Resources
and the Subcommittee on Environmental Pollution
Senate Committee on Environment and Public Works
United States Senate, Washington, D.C.
Monday, February 6, 1984

I am James A. Summers, Secretary of the Department of Natural Resources and Community Development, and I appreciate the opportunity to appear before you today. I am here on behalf of Governor James B. Hunt to testify in support of S. 1471. This legislation was introduced by Senator Helms and Senator East in order to resolve a legal dispute which has blocked a project authorized by Congress in 1970 to stabilize Oregon Inlet. Governor Hunt and many other North Carolinians have worked for years toward realization of this critical project. As time has passed, the urgency for completing this project has become even greater.

The River and Harbor Act of 1970 authorized a federal navigation project at Manteo Bay, North Carolina to stabilize Oregon Inlet through use of jetties and sand transfer facilities. The bill under consideration now would authorize the use of Federal lands adjacent to Oregon Inlet for completion of this project. The lands in question were previously set aside by Congress for the Cape Hatteras National Seashore and Pea Island National Wildlife Refuge. When Congress authorized the Manteo Bay project it clearly intended that the portions of these federal lands necessary for the construction of the jetties were to be used. This legislation simply clarifies the intent of Congress by specifically authorizing the Army Corps of Engineers to use the necessary federal land to complete the Oregon Inlet project.

Governor Hunt and North Carolina State Government stand united with our local coastal governments, Senators Helms and East, and Congressman Walter B. Jones in urging Congress to facilitate completion of this project.

The Oregon Inlet project has been controversial. There has been much misinformation and misunderstanding of the project. We have determined our position on this project with great care. My Department of

Natural Resources and Community Development convened in the spring of 1983 a panel of state and university experts to review the plan for the jetties and to evaluate it by engineering, economic, and environmental standards.

The Department has consulted with knowledgeable persons on the design of the project. After this careful review, we are more convinced that the project is sound and that it should move forward as soon as possible. Today I will discuss our conclusions on five major points.

First, dredging alone is not enough. The Corps of Engineers has been making a valiant effort to maintain a safe channel by dredging in recent years. At one point, all three of the Corps' sidecasting dredges were working simultaneously in Oregon Inlet. However, in December 1982, one winter storm wiped out all the work done by the intensive dredging effort in a matter of days.

The same thing happened the winter before when a storm produced such sudden and drastic shoaling of the channel that the United States Coast Guard had to close the inlet to navigation, with a very destructive effect on our fishing industry and on the economy of Northeastern North Carolina.

Some individuals have urged the Corps of Engineers to use hopper dredges, which would remove sand from the area of the inlet rather than just shifting it to the side of the channel.

Studies by the Corps of Engineers have shown that the hopper dredges will not be able to dump their loads of sand close enough to the shore for the sand to get back into the beach system. Intensive hopper dredging would mean the loss of large quantities of sand from the beach system and would greatly increase the erosion rate on the nearby beaches. This kind of dredging is not only inadequate for navigation reliability and safety. It is also unacceptable for environmental reasons.

The basic flaw with dredging is that a single winter storm can wipe out the accomplishments of several months of expensive dredging in a matter of a few days. In the last two winters, we have clearly seen that dredging alone cannot possibly maintain a reliable and safe channel during our winter fishing season.

Second, we are confident that the project is economically justified. We are assisting the Corps in gathering information to document the benefits of the project. We are convinced that stabilization of the Oregon Inlet will:

* Allow an additional 20-25 million pounds of fish landings per year.
* Save 125 full-time fishing boats an average of 10 detours to Ocracoke Inlet per year. Each trip means an additional 15 hours of travel at a cost of $50.00 per hour.
* Allow an additional three trips through the Inlet to land fish by each of about 250-300 transient vessels. This will save each vessel an average of about 18 hours of travel time each trip.
* Eliminate the need for about 385 detours to Hampton Roads and about 630 detours through Ocracoke Inlet each year because of hazardous conditions at Oregon Inlet. This will be a savings of 15-20 hours each time.
* More than double the number of fishing trips by the 25-30 charter boats which use Oregon Inlet.
* More than double the number of trips through Oregon Inlet by non-commercial fishing boats.
* Reduce the dollar losses due to shipwrecks by an amount ranging from 10-50 million dollars over a 50 year period.

I have told you about only a few of the economic benefits of the Oregon Inlet project. It is the responsibility of the Corps of Engineers to take this information and produce a completed benefit cost analysis according to federal standards. Based on the information that we are aware of we are confident that the Oregon Inlet project will have a sound economic justification.

Third, the construction of jetties at Oregon Inlet will not drastically increase erosion on nearby beaches. This committee needs to appreciate that any inlet blocks the natural movement of sand along the coast and tends to cause erosion on nearby beaches.

Right now with no jetties in place, the beach on Pea Island south of the inlet is presently eroding at an average of about seven feet each year over an extensive area. The jetty project is based on careful consideration of the movement of sand along the coast. We know that the jetties will block sand on the north side of the inlet. The project plan calls for this sand to be systematically transferred to the south side of the inlet to prevent an increase in erosion.

Our support of the jetty construction is based on the commitment by the Corps of Engineers to carry out regular by-passing of sand around the inlet as needed.

Fourth, jetty construction will not permanently harm recreation. The shore along Oregon Inlet is extensively used by the public for surf fishing, sunbathing, walking, and just enjoyment of this beautiful part of our state. During the construciton of the jetties, there will be some limit to access by dune buggies to the construction area. After the project has been constructed, fishermen and sunbathers, including those in off-road vehicles, will still have access to the lands along the north side.

What is more, we know that jetties serve as attracters to many species of fish. Jetties have the same benefits as the artifical reefs that we build to improve fish habitat. The plan for the jetties calls for paved walkways along the top of each jetty to make them accessible to fishermen and will even increase the recreational use of this area.

Finally, we want to stress the value of this project in protecting the lives of our citizens. Eight lives have been lost in shipwrecks at the inlet in the last fifteen years. Three vessels have been lost in three years. Alone, the value of the project for saving lives goes much beyond the fishermen and recreational boaters who are trying to pass through Oregon Inlet. Admiral John D. Costello, Commander of the Fifth District of the Coast Guard, has testified that when Oregon Inlet is closed to navigation, his patrol boat has to travel 125 miles to respond to a distress call that could be only two or three miles off the inlet. This is not a matter to be considered lightly.

The Oregon Inlet Coast Guard Station averages about 300 distress calls a year. Our fishermen, who make a living by going back and forth through Oregon Inlet, face a level of danger that we would never accept on the highways and at the airports that we use for our own business.

North Carolina takes the protection of its coastal environment very seriously. We have two shoreline national parks that take up 127 miles or about 40% of our coastline. State government fully supported the creation of these parks and bought land to donate. We have three shoreline state parks. We have an additional seventy-seven miles of undeveloped barrier islands that will probably never be developed because of state and federal regulations. We have a State Coastal Area Management Act and program that we believe is as strong as any in the country. I mention these facts to show you that we have a proven record of protecting our coastal environment. Our position on Oregon Inlet is consistent with our policy for protecting coastal resources.

I would like to thank the members of this Committee for giving me the opportunity to make this statement. We have considered the Oregon Inlet project very carefully. Our firm conclusion is that the construction of jetties is the only way to provide a safe navigation channel through Oregon Inlet. Any environmental effects of the project would be far outweighed by economic benefits to the State of North Carolina and the added safety for our fishermen. I ask your support in passing S. 1471 and in moving this project ahead to construction as soon as possible.

COUNTY OF DARE
MANTEO, NORTH CAROLINA 27954

P. O. DRAWER [illegible]
[illegible]

TESTIMONY ON S. 1471 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

UNITED STATES SENATE

SUBCOMMITTEE ON WATER RESOURCES

SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION

FEBRUARY 6, 1984

BY: ROBERT V. OWENS, JR.

CHAIRMAN

DARE COUNTY BOARD OF COMMISSIONERS

LAND OF BEGINNINGS

TESTIMONY ON S. 1[illegible] AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT
UNITED STATES SENATE
SUBCOMMITTEE ON WATER RESOURCES
SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION
FEBRUARY 6, 1984

My name is Bobby Owens and I am chairman of the Dare County Board of Commissioners. I was born in Dare County and my family has operated a restaurant and motel business there for more than 35 years. There is no project any closer to my heart than the stabilization of Oregon Inlet, primarily because that inlet affects all the people of Dare County, permanent residents and visitors alike.

Oregon Inlet is Dare County's lifeline to the sea. It is also an economic lifeline for Dare County, especially in the winter months, when fishing and its support services form the mainstay of the Dare County economy. An unstable, shoaled inlet spells disaster for more than just Dare County's fishermen; it threatens the entire economic stability of the county.

In the late 1970s, when Oregon Inlet was less treacherous and American boats were beginnings to be equipped to compete with foreign fleets still fishing near shore, the port of Wanchese, on Roanoke Island, flourished. More than 100 boats crowded the harbor, unloading fish at the several packing houses, purchasing groceries, fuel and ice and preparing to return to the prime fishing grounds through Oregon Inlet. Landings for Dare County hit a record high in the fishing season of

September 1980 to April 1981, as detailed statistics compiled by the North Carolina Division of Marine Fisheries clearly show. Winter landings from the Northern District, which includes the counties whose boats use Oregon Inlet most, show landings of 23,747,726 pounds, with a dollar value of more than $9 million. Looking at figures for the entire calendar year, from January to December, we see steady, high fin-fish, offshore landings for 1979, 1980 and 1981.

On any given day, many boats using Wanchese as home port were actually registered elsewhere in the state or elsewhere in the nation. Fishermen from other states began to recognize Wanchese as a major port, due to its proximity, through Oregon Inlet, to some of the richest fishing grounds on the eastern seaboard.

Now Wanchese sits idle, a victim of the bureaucratic process as much as of sand, as the Oregon Inlet channel constantly shifts and shoals 13 years after the Congress expressedly authorized its stabilization. The effect of that idleness has been disasterous for the local and regional economy.

Landings which peaked in the 1980-1981 fishing season dropped drastically in the past two years to a low of 12,342,290 pounds, just over half of the catch of fin fish two years ago. The value of that 12 million pounds, landed this year, was just under $5.5 million.

Some have said an adequate channel can be maintained by dredging. Since 1960, sidecasting and hopper dredges have worked to provide a safe, stable channel, with little success. The corps concluded, and Congress concurred in 1970 that jetties were needed to provide safe ocean access. But the project has been stymied and the channel remains unstabilized.

What are the effects of an unstable channel?

Boast that dare to brave waters which become essentially unchartered following each northeast blow run the risk of grounding, with probable damage to the vessel or perhaps even its loss, resulting in certain loss of the catch and possible personal injury or death. From 1980-82, three consecutive New Year's Days have dawned with a modern trawler sunk on the bar at Oregon Inlet. The Coast Guard has recorded eight lives lost in Oregon Inlet between 1969 and 1979; two more died there within the past two years. Other groundings result in no personal injury but represent serious damage to vessels. Captain Jimmy Rhule, who ran his boat Darana R aground at Oregon Inlet in February 1983 suffered $250,000 worth of damages and could not fish the final six weeks of the season. He and others like him have vowed to steer clear of Oregon Inlet until it is stabilized.

Steering clear of Oregon Inlet results in a bleak economic picture for Dare County and the surrounding counties which depend on commercial and recreational fishing as integral facets of the local economy.

The fishermen themselves who have been forced to move their operations to other, stabilized ports, estimate area losses at hundreds of thousands of dollars each week in the peak of the fishing season. Northeastern North Carolina boats, and others fishing the North Carolina coastal waters, lose precious hours getting their catches to market by steaming miles out of the way. These figures, which average out to between $10,000 and $20,000 per boat per trip, do not take into account such personal losses as those suffered by the Tate family of Belhaven, North Carolina, whose two steel-hulled trawlers, the *Lady Phyllis* and the *Lois Joyce*, sank at Oregon Inlet two years apart. New Year's Day for the past three years has been anything but happy as fishermen and their families and friends stand mute on the shore watching a total of three trawlers lost to the bar. Others such as Jimmy Rhule were able to salvage their grounded vessels although damages to his boat alone totaled more than $250,000 not counting the loss of more than two months of the fishing season.

Pack houses in Wanchese, responsible for moving those record catches just four years ago are empty now, employees out of work, owners facing bankruptcy.

Other Wanchese businesses are feeling teh backlash of an unstable Oregon Inlet. A local hardware store, the oldest on Roanoke Island, suffered a 53 percent drop in business in the past year; groceries face similar losses. Other businessmen have simply closed up shop, locking the door, boarding up the windows, leaving those fishermen who dare to brave Oregon Inlet without support facilities once they reach a safe harbor. Two years ago, there were four marine electronic or hydraulic firms in Wanchese. Today there are none. Wanchese Shiplift, started confidently by an area boatbuilder and others on the strength of the federal commitment to Oregon Inlet and designed to serve the larger commercial fleet which had begun using Wanchese, has now closed and is for sale.

Roanoke Island Steel and Boat Works, the area's largest boatbuilder of commercial fishing trawlers, is preparing to leave Dare County and locate elsewhere. The vessel now under construction there cannot cross the ocean bar, making her delivery and sea trials much more difficult and costly.

What has been the effect of Oregon Inlet? Unemployment in Dare County, traditionally higher in winter months than in the summer tourist season, skyrocketed to the highest level in the state last yeaf and more than doubled over that of the year before. The sole cause is Oregon Inlet.

Dare County's unemployment rate has creeped steadily upward in the past few years during the winter months. Unemployment hit a record high for the winter of 1981-82, topping off at about 22 percent. With conditions at Oregon Inlet worsening to the point that many fishermen were simply prevented from passing through or unwilling to take the risk when conditions were marginal, Dare County's unemployment rate hit 42 percent during early 1983. The entire month of April, 1983, was virtually lost to support facilities in Wanchese as no boats attempted to traverse Oregon Inlet from mid-March, 1983 to May 1983.

Other businesses outside of Wanchese are feeling the pinch, as is Dare County government through loss of sales tax revenues from packhouses, fishermen and support facilities. Area restaurants depend on fresh, local seafood as a drawing card for the visitor; a local ice company has seen his business drop by two-thirds in four years due to Oregon Inlet. A dry stak storage and wet slip marina lost 45 percent in revenues in the past year alone due to Oregon Inlet. Realtors, builders, motel and hotel operators, insurance agents--the list and the stories go on and on--all are facing increasing economic loss from the unstabilized inlet.

Dare County's summer economy, based on tourism, is also tied to Oregon Inlet, although not as strongly as is the winter economy. Summer users of Oregon Inlet include the charter fleet and private recreational boaters and fishermen. The charter fleet, which numbers about 30 boats, provides opportunities for visitors to motor out to the Gulf Stream and land a blue marlin, tuna, dolphin or other gamefish under the guidance of experienced captains and mates. This business is entirely dependent on safe access through Oregon Inlet to the Gulf Stream, and this recreational opportunity represents a minimum of $1.8 million to the local economy. This figure, obtained by multiplying the average use (125 trips per boat per season) by the average cost per trip ($475.00) does not include such additional costs as tips to mates, purhcase of supplies and incidental revenues such as lodging and meals for those who travel miles each year to fish on the charter fleet boats. With the jetty project, Dare County can anticipate a 40 percent increase in charter use, both from additional boats working the area and additional days made available with a safe, navigable inlet during the fishing season. This 40 percent increase translates to $2.5 million in revenue, at minimum.

Many visitors bring smaller private pleasure craft to Dare County with them. Literally thousands of these per summer are launched from the public ramp at the Oregon Inlet Fishing Center alone; many of these pass under the Herbert C. Bonner bridge and out Oregon Inlet for sportfishing fun. Judging from pleasure boating use in other coastal areas, Dare County can expect similar increases in pleasure boat traffic with a stabilized Oregon Inlet. We can also expect the current rate of business, which has already dropped for many enterprises in Dare County, to continue to decline as the inlet continues to be treacherous and dangerous.

And perhaps these losses would not seem so bad if the fishermen, and in fact, the whole community, had taken the risk blindly, opting to build larger, deeper draft boats in expectation of larger catches but ignoring the instability of Oregon Inlet. But the fishermen were banking on the strength of a federal promise. The 1970 Congressional authorization of the Manteo (Shallowbag) Bay Project was enough for them, and they forged ahead, equipping themselves for the day when the construction of jetties was complete. They have felt increasingly betrayed for their trust.

A lesser people, folks who would be more willing to sit back, not fight for their heritage and right to make a living, people who would rather take from the government in the form of food stamps or unemployment checks, instead of making their own way, would have given up on Oregon Inlet a long time ago. Dare County itself, were her people less proud, less fiercely independent, may well have given up. But we have pledged ourselves to continue the fight for stabilization until Oregon Inlet is made a safe passage for out boats and for other boats which fish off our waters.

It has been alleged by some who prefer to deal with fantasy rather than fact that there is no local support for this project. The truth is that stabilization of Oregon Inlet ranks as the number one concern among Dare County's citizenry, as shown by a recent poll conducted by the Outer Banks Chamber of Commerce. Civic clubs in Dare County such as the Lions Club and the Rotary Club have stepped outside their usual purview to take strong stands of support for this project.

Regionally, organizations such as the Southern Albemarle Association, made up of representatives from six northeastern North Carolina counties to address transportation needs and the Albemarle Regional Planning and Development Commission, have gone on record as supporting stabilization. The Albemarle Area Development Association and Northeastern North Carolina Tomorrow have both recognized how vital a stabilized Oregon Inlet is for the economic health of the entire region. On the local government level, 11 coastal counties and eight local municipalities, as well as four Canadian Departments of fisheries have gone on record as supporting a stabilized Oregon Inlet, as has the House and Senate of the North Carolina General Assembly.

Our two Senators, Jesse Helms and John East; our Congressman, Walter B. Jones and our Governor, James B. Hunt, Jr. have united in a bipartisan stance of support for this project.

That is why we are asking for your favorable consideration on S. 1471 giving the United States Army Corps of Engineers the management rights over the lands needed to construct the stabilizing jetties. We in Dare County feel very strongly about these lands needed for jetty construction. The lands belonged to Dare County people and were taken from them to create the Cape Hatteras National Seashore. While the Seashore is a great resource enjoyed by residents and thousands of visitors yearly, we do not believe the use of less than 175 acres will adversely affect the Seashore user's pleasure. In fact, recreational fishing will be enhanced by the jetty system.

We recall when the Seashore was created, that Dare County was promised then that the public land would never be a detriment to Dare County or its people who gave the land. But that is what is happening now. The use of these few acres is standing between the success of an industry and its failure, and none of us can afford to see another industry in America fail. And this industry is proven over time for North Carolina as a healthy, thriving one, needing only reliable sea access to continue. The resource is waiting; the fishermen are ready. They have prepared themselves to farm the sea in light of federal incentives and enactment of the 200 mile limit, and they need only reaffirmation of the Congress's earlier promise to stabilize Oregon Inlet.

Your favorable posture on S. 1471 will guarentee our fishermen their needed sea access, will help preserve adjacent wildlife areas and our commercial fishing heritage and will enhance our recreational and commercial fishing opportunities. We respectfully urge your support.

# STATEMENT FOR THE RECORD

BY

Vincent Fogliano
Vice President
Fair Fish Company
Fulton Fish Market
New York, New York

Before the

Subcommittee on Environmental Pollution
and the
Subcommittee on Water Resources

Committee on the Environment and Public Works
United States Senate

February 6, 1984

S. 1471

Mr. Chairman, Members of the Subcommittees: Fair Fish Company is one of the half-dozen or so largest wholesale fish dealers in the world-famous Fulton Fish Market in New York City. We share this centralized fish market with approximately fifty other fish dealers who sell to restaurants, chain groceries, supermarkets, processors, and retailers. We employ twelve at Fair Fish Company, and I assume that each of the other dealers in the Fulton Fish Market has a similar number of employees dependent on work at his establishment, so perhaps 500 people work here directly in fish wholesaling.

At Fair Fish Company, as at a number of the other fish dealers', we buy regularly from the fishermen and fish packing houses of the Pamlico Sound area of northeastern North Carolina. During some times of year, these fishermen are in a natural position to supply fish steadily when other American fishermen report that they are landlocked by winter weather or by other factors. Because consistency of supply is vital to any wholesaler, we rely on these North Carolina fishermen at times like that.

Most fish dealers are more aware of the problems and needs of their customers than those of their suppliers, the fishermen. Most of the time, we at Fair Fish Company are typical in this respect. But in the past three or four years, we have become increasingly aware of a problem our fishermen suppliers from the Pamlico Sound area of North Carolina have because it has adversely affected our ability to supply fish to our customers consistently and at predictable prices.

The fishermen frequently blame the problem on "the Oregon Inlet situation" when we telephone them for fish — we can't tell in New York City what the weather is like or channel conditions are in North Carolina. To us, as to them, a day witnout fish to sell is a day that can never be recovered. To our customers, the lack of supply may be even more influential. While there is some "slinky effect" in the pipeline, seafood, perhaps more than any other commodity, is time sensitive. If there are no fish because of "a blow" at Oregon Inlet, and then the weather improves and the boats can get in, prices become volatile and virtually uncontrolable. I have seen prices for the same species and the same grade double from one day to the next; and triple from the beginning of the week to the end of the week.

The modern American consumer is little aware and cares less about the route by which food arrives on his supper table. But he is aware of changes in price and availability of supply, and his eating habits are based on a generalized sense of the stability of a market. A restauranteur will leave fish off his menu altogether if he cannot count on a steady supply at a predictable price. One of the reasons the chicken industry has been taken over by such giants is because they have mastered market fluctuations by centralizing; chicken is always plentiful and inexpensive.

Most of my customers and most of their customers will never visit the Federal recreational lands at Oregon Inlet. Like all urban dwellers, we value and appreciate recreational facilities because we know that they are there for us to use if the occasion arises. But our lives are affacted by other forces as well as the impulse to travel and vacation. The breadth of life is best experienced in the home and with the family — and now perhaps I betray the bias that comes from being descended from Italians — it is as important to be able to afford to feed our families from a bountiful and varied table.

It seems to us when we find environmentalists opposing projects like the one at Oregon Inlet which the fishermen need so badly, that if these so-called experts had their way in all things, life would become dull, safe, and impoverished. This cycle of scarcity and abundance also wastes resources. Fish that cannot be sold because of a glut following a scarcity cannot alleviate the scarcity in any way, and must be thrown away. This meddling by environmentalists in an otherwise orderly, if unpredictable marketplace actually costs our resources dearly.

Left to their own initiative and independence, with the government's technological assistance at Oregon Inlet they require, the fishermen would be able to manage their resource well, moderating scarcity and abundance, ending waste, and leveling market forces. We feel that it is important to keep in mind during your deliberations a fact that has been little spoken of in this debate: it is the fishermen who contribute more meaningfully to the quality of life than the outspoken but unsympathetic daydreamers who oppose them at Oregon Inlet for abstract intellectual reasons.

Therefore, we respectfully urge you to report S. 1471 favorably.

Thank you.

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RECEIVED FEB

February 6, 1984

Sen. John H. Chafee, Chairman
Subcommittee on Environmental Pollution
Committee on Environment & Public Works
Hart Senate Office Building--Room 408
Washington, D.C. 20510

RE: HR-3082
'Rider" for Jetty Construction--Oregon Inlet

Dear Sen. Chafee:

I am adamantly opposed to the construction of jetties to be used for the purpose of stabilization of Oregon Inlet at the Cape Hatteras National Seashore in North Carolina.

I have done extensive reading, studying, and have followed closely this issue in the media. I am thoroughly convinced that the construction of these jetties is not in the interest of the tax-paying American public, the economic welfare of the state of North Carolina, and is most certainly not in the interest of the very area it is proposed to help. The construction of these jetties will ruin the beaches via severe erosion south of the jetties, will ruin the area for future recreational uses, and can in no way be shown as cost-effective for the public at large.

We must begin to understand the severe environmental consequences of well-intentioned, but ridiculous, proposals such as this. It aids, temporarily, a few at the long-range expense of many. And attaching a very controversial "rider" such as this to an otherwise meritorious bill is a sham of our legislative process and a detriment to the public.

I hereby request that this letter be included in the records of the hearings that were held January 27 and 30, 1984, on this subject.

Thank you for your time and the liberty I enjoy of expressing myself.

Yours truly,

Douglas E. Jackson, Jr., CLU

DEJ:cl

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# STATEMENT ON THE OREGON INLET PROJECT

to

The Subcommittee on Environmental Pollution

and

The Subcommittee on Water Resources

of the

Senate Environmental & Public Works Committee

by

Orrin H. Pilkey
James B. Duke Professor of Geology
Duke University
Durham, N.C. 27708

I am a James B. Duke Professor of Geology specializing in coastal and marine geology. I have published more than 80 technical papers in my field and have written or edited more than a dozen books. I have written two books on North Carolina shoreline development problems, one book on shoreline development on a national scale, and I am presently co-editing a series of 22 books on each coastal and Great Lakes states which emphasize site specific safety of development. I am former President of the North Carolina Academy of Science and the present president-elect of the Society of Economic Paleontologists and Mineralogists.

I oppose construction of the Oregon Inlet jetties. The following are the principal reasons for my opposition:

(1) Stabilization of an unusually dynamic inlet with very large jetties for the benefit of a small fishing industry is an outdated approach. It flies in the face of overwhelming evidence such as on New York's south shore, the Texas coast, and the South Florida coast, that in the long run jetties cause severe environmental damage, sand bypass systems or not. The heavy recreational use of our shorelines makes this damage unacceptable. In 1982, a white paper signed by two-thirds of American coastal geologists called for a turnaround in the management of the American shoreline and a halt to stabilization projects such as Oregon Inlet.

(2) Every jetty is an engineering experiment. Highly competent physical and mathematical modeling such as that done by the Corps of Engineers Waterway Experiment Station in Vicksburg, Mississippi is useful for jetty design criteria, but is quite speculative with regard to the environmental impact of jetties on adjacent beaches. Nobody has ever correctly predicted the long range environmental impact of jetties (other than to say the impact will be negative) and Oregon Inlet is no exception.

(3) I anticipate that long range damage in the form of increased shoreline erosion can be expected for many miles, both to the north and the south of Oregon Inlet. The Corps' assertion that the impact of the jetties will be restricted to within 3 miles of the inlet is incorrect even if the sand bypass system functions perfectly.

(4) The sand bypass system will almost certainly not prevent accelerated beach erosion south of the jetties. There are a number of problems:
(a) This system cannot respond during big storms when huge amounts of sand are moved in a few hours. Severe beach erosion, either to the north or south, will result.
(b) There is no assurance that the funds needed to bypass sand will be available in the future. Future administrations will cut sand bypass funding long before channel maintenance funds will be dropped.
(c) Sand bypass systems have never worked elsewhere. Sometimes they have reduced the extent of erosion "downstream" from jetties, but they have never halted jetty related shore damage. For example, note the strong shoreline offsets at jetties in Florida with bypass systems.
(d) Design of the sand bypass system for the Oregon Inlet jetties is not yet complete. When, and if, the design is complete it is optimistic in the extreme to think that this system, as yet untested in the field, will be the world's first successful sand bypass system.

(5) Intensified channel dredging offers a reasonable alternative to jetty construction. A new channel is working right now, halfway through the fishing season. It is important to emphasize that the Corp's present economic comparison of dredging with the jetties is based on a 20 foot channel in spite of the fact that a 14 foot channel will suffice for the Wanchese fishing fleet. The Corps has not evaluated the 14 foot channel because vessels cannot navigate the 14 foot channel during a storm. However, very few east coast inlets can be navigated safely during a storm. There is no justification for throwing out the 14 foot channel alternative, as the Corps has done.

(6) The dredging alternative leaves open a number of future inlet management alternatives, including jetties.

(7) The Wilmington District, in contrast with its long record of sound coastal engineering projects, has, in this instance, acted irresponsibly and with arrogance. In a series of discussions and orientations with fishermen, state officials, and coastal plain citizens groups, it has presented a positive view of the jetty project unjustified by the facts and vice versa for dredging alternatives. The District virtually defied the Senate appropriations subcommittee in evaluating only the 20 foot channel and not the 14 foot channel dredging alternative. The District was informed by several citizens about the giant "miscalculation" in the cost/benefit ratio, later described as a "fundamental error" by Assistant Secretary of the Army, William R. Gianelli. Colonel Hughes, then District engineer, wrote to one citizen that no review of the cost/benefit study was legally required and therefore it would not be carried out. Perhaps most frustrating of

all has been a virtual stream of statements and actions denigrating the likelihood of success of dredging alternative.

Whether these are described as lack of objectivity, intellectual dishonesty, or strong partisanship, the actions of the Wilmington District in stifling opposition to the jetty project is a frightening role for any federal group to play. The people of North Carolina have been denied an objective dialogue on the Oregon jetty issue because of the Wilmington District.

(8) Lastly, the governor of North Carolina, James B. Hunt, can rightly claim a large share of the credit for our state's highly successful coastal zone management program. The very quality of this program makes it all the more imperative that we do not carry out a major shore hardening project at Oregon Inlet that will start us down the road of the South Florida and New Jersey shores. I believe that if the dredging alternative is chosen instead of the jetties, an important example will have been set for American shoreline management.

# STATEMENT TO THE

# U.S. SENATE COMMITTEE
# ENVIRONMENT AND PUBLIC WORKS

By

Dr. Stanley R. Riggs
Professor of Geology
East Carolina University
Greenville, North Carolina 27834

February 6, 1984

Mr. Chairman, Members of the Committee, My name is Stanley R. Riggs. I am professor of geology at East Carolina University, where I have been since 1967. For the past 18 years I have had an extensive research program concerning the geology and natural history of North Carolina's coastal system with extensive funding from the State of North Carolina, N.O.A.A. (through the North Carolina Sea Grant College), and the National Science Foundation. I have had numerous research grants dealing specifically with shoreline erosion and inlet processes, served on several Govenor's Commissions on coastal erosion, published over 25 major papers, books, films, etc. on various aspects of North Carolina's coastal system, and was awarded the 1983 O.M. Gardner award by the University of North Carolina Board of Govenors. This award, presented to an individual who has made major "contributions to the welfare of the human race," represents a significant recognition of my work with coastal systems.

My research program for more than half of these 18 years has dealt directly with the geologic processes operating within the northeastern N.C. barrier islands which include Nags Head, Cape Hatteras National Seashore, and Oregon Inlet. I have an extensive data base throughout this area, which includes thousands of kilometers of shallow high-resolution seismic lines; hundreds of core holes including deep holes on the barriers and shallow vibracores across the beachface, inner shelf, and throughout the estuaries; as well as extensive process-response studies monitoring shoreline and inlet changes through storm cycles and through time, etc.

My opposition to the construction of the proposed Oregon Inlet jetty system is based on my scientific knowledge of natural processes operating within this high energy northeastern N.C. coastal system. Hardening of this inlet, which is an integral component of a larger and extremely dynamic and changing barrier island system, will cause major short- and long-term changes and readjustments to the adjacent coastal systems. The precise nature of most of these changes can only be poorly predicted, at best; but they will occur and they will cause increasing problems with utilization and management of this coastal system.

I am opposed to the construction of the Oregon Inlet jetty system on the following grounds.

1. Shoreline erosion: A jetty system of the size proposed for Oregon Inlet will modify the shape, size, and geometry of the ebb-tide delta. This will cause upstream and downstream responses and readjustments of the shoreline over distances at least 10 to 12 miles, which is the extent of present shoreline response to Oregon Inlet processes. This entire region is severely eroding in response to the present inlet system; modifications to the present system will modify the erosion patterns with a high probabilty of significantly increasing the rates beyond the project limits. The proposed project does NOT consider the erosion beyond the the few miles which define the limits of the project. There is a very high probability that areas such as rapidly developing South Nags Head, the highway and wildlife ponds at Pea Island National Refuge, Rodanthe, etc. will be forced to harden their shorelines with upstream and downstream groin fields in the near future to slow down the response processes in the peripheral areas to the jetty system.

2. Sediment bypass: The proposed sediment by-pass system has several very fundamental flaws associated with it. Beaches and inlets are most active during the high energy storm periods of winter; storms are the driving force behind most coastal processes. Beaches need sand during these high energy periods to absorb the energy of the waves. Consequently, a by-pass system which is only capable of operating during summer months forces us to be able to anticipate winter sediment needs up and down the coast and predict the specific type, intensity, and duration of storms through the subsequent winter months. With the proposed by-pass system, we will force the coastal beaches to "buy their

sand on the time payment plan". This will have disastrous results with respect to coastal erosion; if they can wait until the summer calm comes, then hopefully we can dredge enough sand in the right direction in anticipation of the future storm patterns. GOOD LUCK, particularly since we haven't even successfully designed the by-pass system which can operate within coastal energies that occur in this area during the summer. Gambling with the future of the Cape Hatteras National Seashore in this way is ludicrous.

3. Inlet restriction: Inlets, or outlets as this one should be called, act as self-adjusting saftey valves which open-up and close-down in response to changing hydraulic pressures. The construction of this jetty system will harden the inlet, preventing the natural responses from operating. I believe that there is a very high probability that this restriction will cause increased storm flooding within the estuarine coastal areas which could subsequently blowout a new outlet either adjacent to the jetties or through other weak zones in the barriers.

4. Model studies: The Oregon Inlet jetty system and the proposed sediment by-pass system are based on extensive models. However, the models are developed from very limited on-site oceanographic data. Most of the data that is used is based either on theory with lots of major assumptions or has been obtained during low energy conditions when oceanographic measurements can be made. We do not understand coastal processes operating during the extreme energy conditions of a major storm. What an expensive and potentially catastrophic experiment this jetty system could be if our assumptions, theories, and wave-tank models aren't correct!

5. Justification of project and alternatives: Development of the Wanchese Harbor was done by the State with the total understanding of independence of the jetty system. Now the cart is pushing the horse. The fishermen do have a real problem with

Oregon Inlet; however, there are alternatives which must be considered before we commit ourselves to the unknowns of the proposed jetty system. The important thing is to solve the fishermens problems without creating long-term devastating and costly shoreline problems. New dredging techniques must be tested; if these work, then they would have a relatively minimal negative impact upon the adjacent coastal system.

The fact that Congress authorized this project over 10 years ago, does not prove that it can be done or that it should be done. The Oregon Inlet jetty system has become a political project which TOTALLY DISREGARDS the natural processes operating within this dynamic coastal system. We should not feel obligated to perpetuate a bad decision. The decision to begin hardening this barrier island shoreline with major modifications structures such as the proposed jetty system, will commit Dare County, the State of North Carolina, the Department of Interior, and the citizens of this country into an ever escalating committment to expensive shoreline management projects for perpetuity. History is a good teacher--we should be such good learners.

If anyone has any questions that I might be able to help you with, I would be more than willing to entertain them.
Thank you for your time and consideration.

98TH CONGRESS
1ST SESSION

# S. 1471

To authorize the use of certain lands in connection with the project at Manteo (Shallowbag) Bay, North Carolina.

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IN THE SENATE OF THE UNITED STATES

JUNE 14 (legislative day, JUNE 13), 1983

Mr. HELMS (for himself and Mr. EAST) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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# A BILL

To authorize the use of certain lands in connection with the project at Manteo (Shallowbag) Bay, North Carolina.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That, notwithstanding any other provision of law, the Secretary of the Army, acting through the Chief of Engineers, is authorized to use land within the boundaries of the Cape Hatteras National Seashore and land within the boundaries of the Pea Island National Wildlife Refuge which he determines to be necessary to carry out the project at Manteo (Shallowbag) Bay, North Carolina, authorized by section 101 of the River and Harbor Act of 1970.

○